
**ENVIRONMENTAL ASSESSMENT
FOR PERIMETER SECURITY
LIGHTING
AT
FORT MACARTHUR,
CALIFORNIA**

**PREPARED BY

61 CELS/CLCV
LOS ANGELES AIR FORCE BASE**

JULY 2007

Report Documentation Page				Form Approved OMB No. 0704-0188	
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1. REPORT DATE JUL 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE Environmental Assessment for Perimeter Security Lighting at Fort MacArthur, California				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) 61st Civil Engineer & Logistics Squadron (CELS/CLCV), Los Angeles AFB, CA, 90009				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 85	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

**FINDING OF NO SIGNIFICANT IMPACT
FOR PROPOSED PERIMETER SECURITY LIGHTING SYSTEM AT
FORT MACARTHUR
LOS ANGELES AIR FORCE BASE**

INTRODUCTION

In order to meet Anti-Terrorism Force Protection (ATFP) requirements, Los Angeles Air Force Base proposes to install Photo-Voltaic (PV) lighting systems around the perimeter of Military Family Housing (MFH) areas associated with the base – Fort MacArthur, Pacific Crest and Pacific Heights. The purpose of the systems would be to provide security lighting around the perimeter of the MFH areas. The PV perimeter lighting system would include poles, PV panels, LED light fixtures and associated wire and conduits.

PROPOSED ACTION

The PV powered LED Lighting system would be designed to provide perimeter outdoor lighting to complement and enhance existing lighting. The proposed PV lighting system would allow each PV panel and its associated LED fixtures to be independent stand-alone units. The PV lighting infrastructure would be highly redundant, reliable and secure.

The PV Security Lighting System would consist of approximately 169 PV powered single and double LED fixtures to be installed on existing metal fence or masonry wall. The fixtures would be approximately thirty feet apart and eight feet above ground level. Approximately 123 PV panels would be positioned throughout the perimeter of the MFH areas, on metal, wood and composite poles. The poles would range from eight to twenty-five feet high, depending on specific sighting requirements. PV panels would be spaced up to two-hundred feet apart. Associated conduits and wiring between PV panels and LED fixtures would be self contained.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The EA for Perimeter Security Light System reviewed thirteen environmental disciplines. The environmental disciplines of air quality, noise, land use, geological resources, water resources, biological resources, transportation, visual resources, cultural resources, socioeconomics, environmental justice, hazardous materials and waste and safety. The environmental disciplines analyzed in-depth in the EA include air quality, noise and visual resources.

Based on activities associated with the proposed security lighting system, no impacts to air quality are anticipated. A short term increase in air emissions would occur during construction activities, but these emissions would not impact regional or local air quality. Noise levels would also be temporarily increased during construction. However, the proposed action would not raise noise levels, except for short spikes in the 90-decibel range. Visual resources would not be impacted. Photo-voltaic panels mounted on poles would be visible from outside the MFH areas, but they would not impact any designated scenic views or visual corridors specified by the California Coastal Commission or the San Pedro Coastal Land Use Plan. The EA concludes no significant environmental impacts would result from the proposed perimeter security lighting system if appropriate construction practices are implemented.

DECISION

As a result of the analysis and impacts in the EA, it was concluded the Proposed Action and alternatives would not have a significant impact on human health or the natural environment and therefore, an Environmental Impact Statement is not warranted.


JOSEPH H. SCHWARZ, Col, USAF
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28 Aug 07
Date

Table of Contents

1.0	Overview	1
1.1	Introduction	1
1.2	Mission	1
1.3	Location	1
1.4	Purpose and Need	7
1.5	National Environmental Policy Act	7
2.0	Description of Proposed Action and Alternatives	8
2.1	Introduction	8
2.2	Proposed Action	8
2.3	Security Solar Lighting System Details	8
2.4	Alternatives	13
3.0	Affected Environment	14
3.1	Air Quality	14
3.2	Noise	20
3.3	Land Use	22
3.4	Geologic Resources	26
3.5	Water Resources	29
3.6	Biological Resources	31
3.7	Transportation and Circulation	36
3.8	Visual Resources	38
3.9	Cultural Resources	41
3.10	Socioeconomics	45
3.11	Environmental Justice and Protection of Children	49
3.12	Hazardous Materials and Wastes	53
3.13	Safety	56
4.0	Environmental Consequences	57
4.1	Air Quality	57
4.2	Noise	58
4.3	Land Use	60
4.4	Geological Resources	61
4.5	Water Resources	62
4.6	Biological Resources	64
4.7	Transportation and Circulation	65
4.8	Visual Resources	67

4.9	Cultural Resources	68
4.10	Socioeconomics	70
4.11	Environmental Justice and Protection of Children	71
4.12	Hazardous Materials and Wastes	73
4.13	Safety	74
5.0	Cumulative Impacts	75
6.0	References	77
7.0	List of Preparers	80

1.0. OVERVIEW

1.1. INTRODUCTION

Los Angeles Air Force Base (LAAFB) proposes to install Photo-Voltaic (PV) lighting systems around the perimeter of Military Family Housing (MFH) areas. The purpose of the systems would be to provide security lighting around the perimeter of the MFH areas. The PV perimeter lighting system would include poles, PV panels, LED light fixtures and associated wire and conduits. The proposed lighting systems would be located at 1) Fort MacArthur, 2) Pacific Crest, 3) Pacific Heights I, and 4) Pacific Heights II.

1.2. MISSION

LAAFB hosts the Space and Missiles Systems Center (SMC). SMC's strategic priorities include: 1) acquiring, delivering and sustaining effective and affordable space and missile systems that exceed warfighter needs; 2) evolving and synchronizing ground systems to support current and future space and joint warfighter requirements; and 3) leading the way in developing Responsive Launch and Joint Warfighting Space. Many Air Force personnel stationed at LAAFB and other military members stationed in the area, reside in four military residential areas: Fort MacArthur, Pacific Crest and Pacific Heights I & II.

1.3. LOCATION

The MFH community of LAAFB consists of Fort MacArthur, Pacific Crest and Pacific Heights I & II (Figure 1-1). The four neighborhoods consist of 573 housing units located in the Community of San Pedro, on the Palos Verdes Peninsula, within the City of Los Angeles.

1.3.1. Fort MacArthur

Fort MacArthur is located in the city of San Pedro, approximately six miles west of the City of Long Beach and approximately twenty miles south of LAAFB. It encompasses approximately 91 acres (Figure 1-2). Fort MacArthur is a distinctive military neighborhood with a total of 403 housing units. Family housing in the northern part of Fort MacArthur consists primarily of historic homes constructed in 1918 along Quartermaster Road and newer family housing constructed in the 1980s

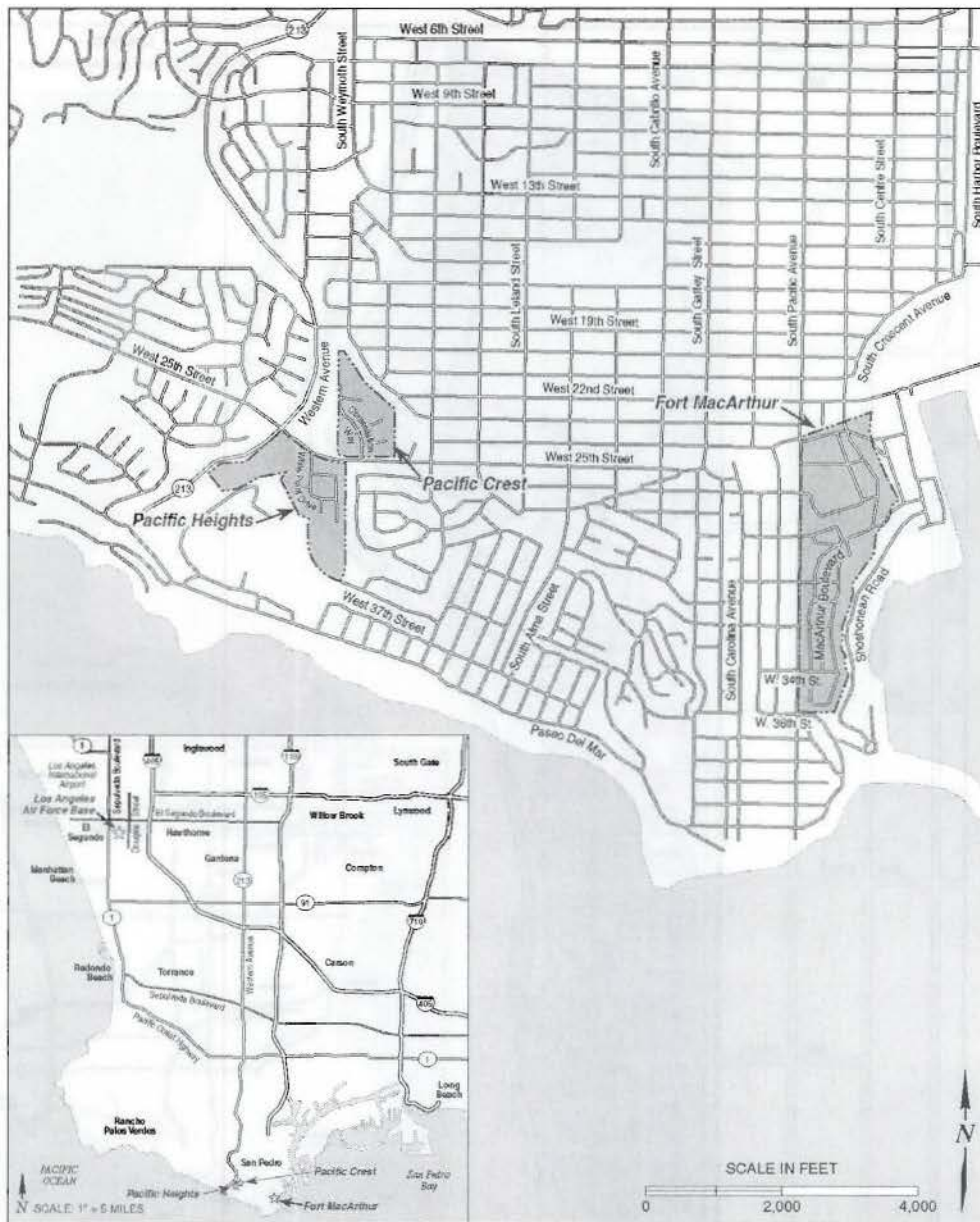
on Quartermaster Center. The southern portion of the housing area consists entirely of homes constructed in the 1980s. Other facilities within Fort MacArthur include community service facilities (e.g., housing management office, church), dormitory housing, multiple playgrounds, open green space areas, parade grounds, the community pool and the community center.

1.3.2. Pacific Crest

Pacific Crest is located approximately 1.5 miles west of Fort MacArthur, in the eastern section of San Pedro. It encompasses approximately 22 acres (Figure 1-3). The Pacific Crest neighborhood consists of 91 housing units distinctive of the suburban design style of the mid-1980s. The housing area is positioned high on a coastal hill overlooking the Pacific Ocean to the south and San Pedro to the north. There are no military family community service areas or commercial areas within this neighborhood.

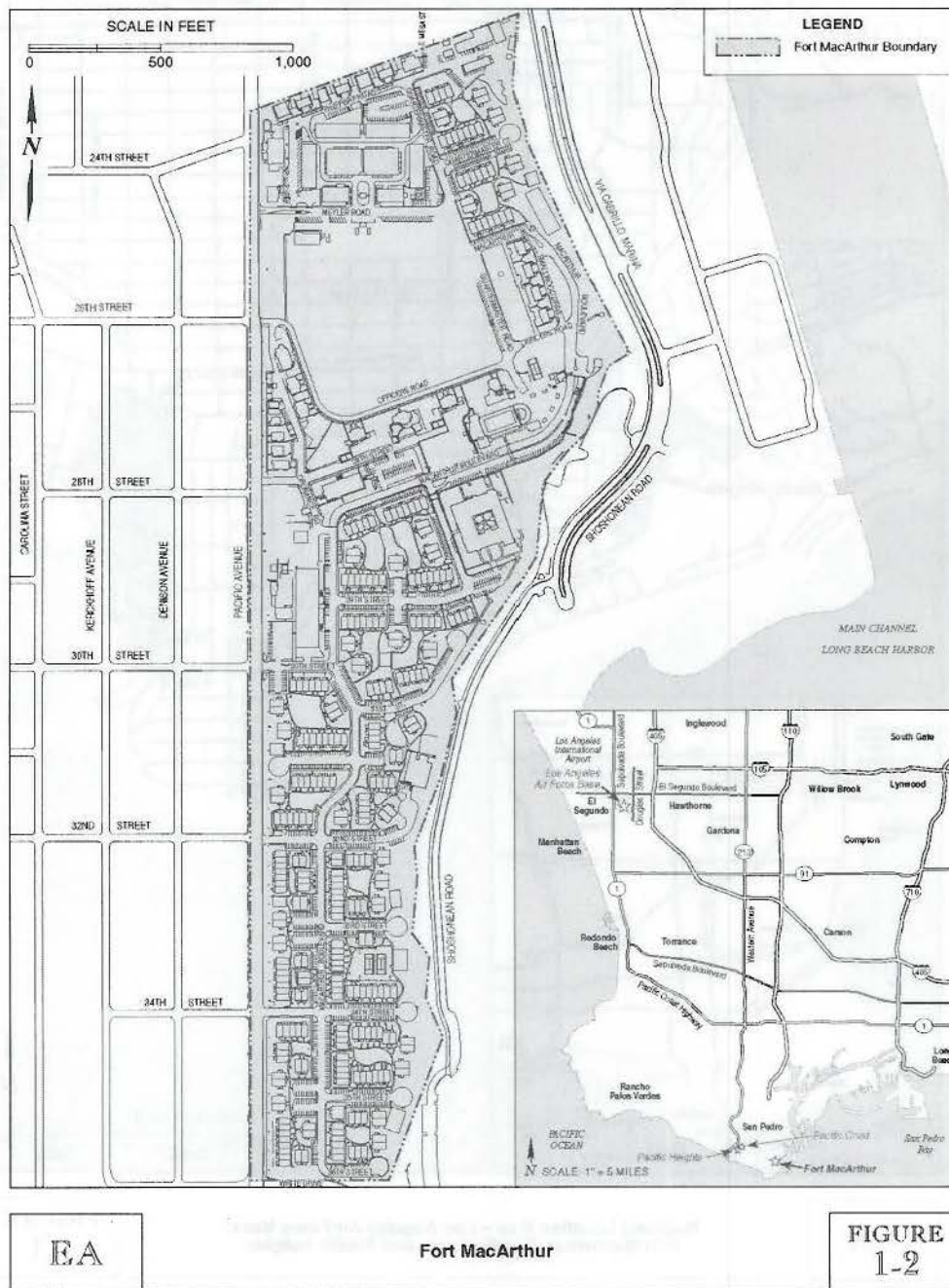
1.3.3. Pacific Heights

Pacific Heights, which includes the Pacific Heights I and Pacific Heights II neighborhoods, is located approximately 1.5 miles west of Fort MacArthur, south of West 25th Street. It encompasses approximately 39 acres (Figure 1-4).

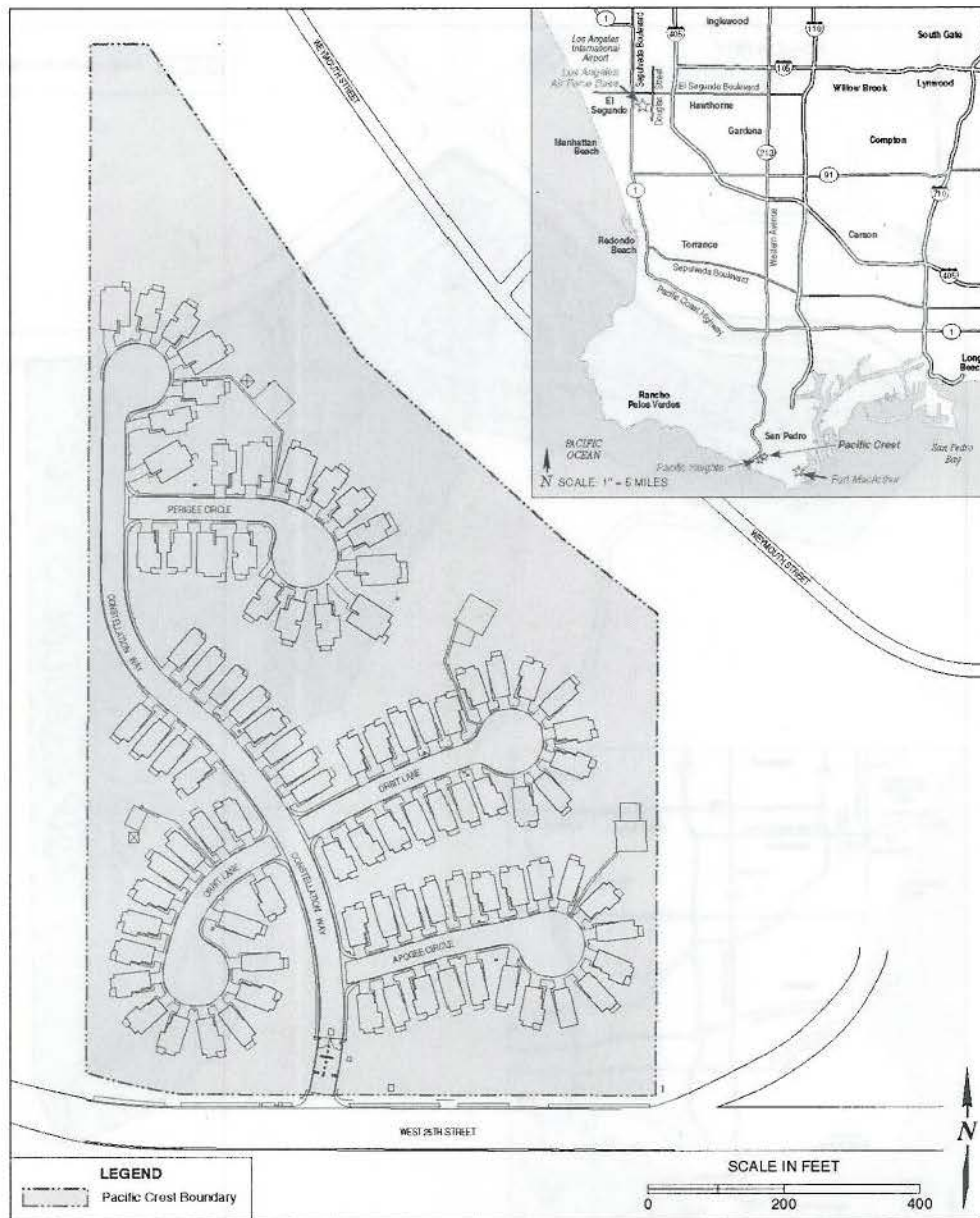


EA **Regional Location Map – Los Angeles Air Force Base:
Fort MacArthur, Pacific Crest, and Pacific Heights** **FIGURE
1-1**

1-3



1-4

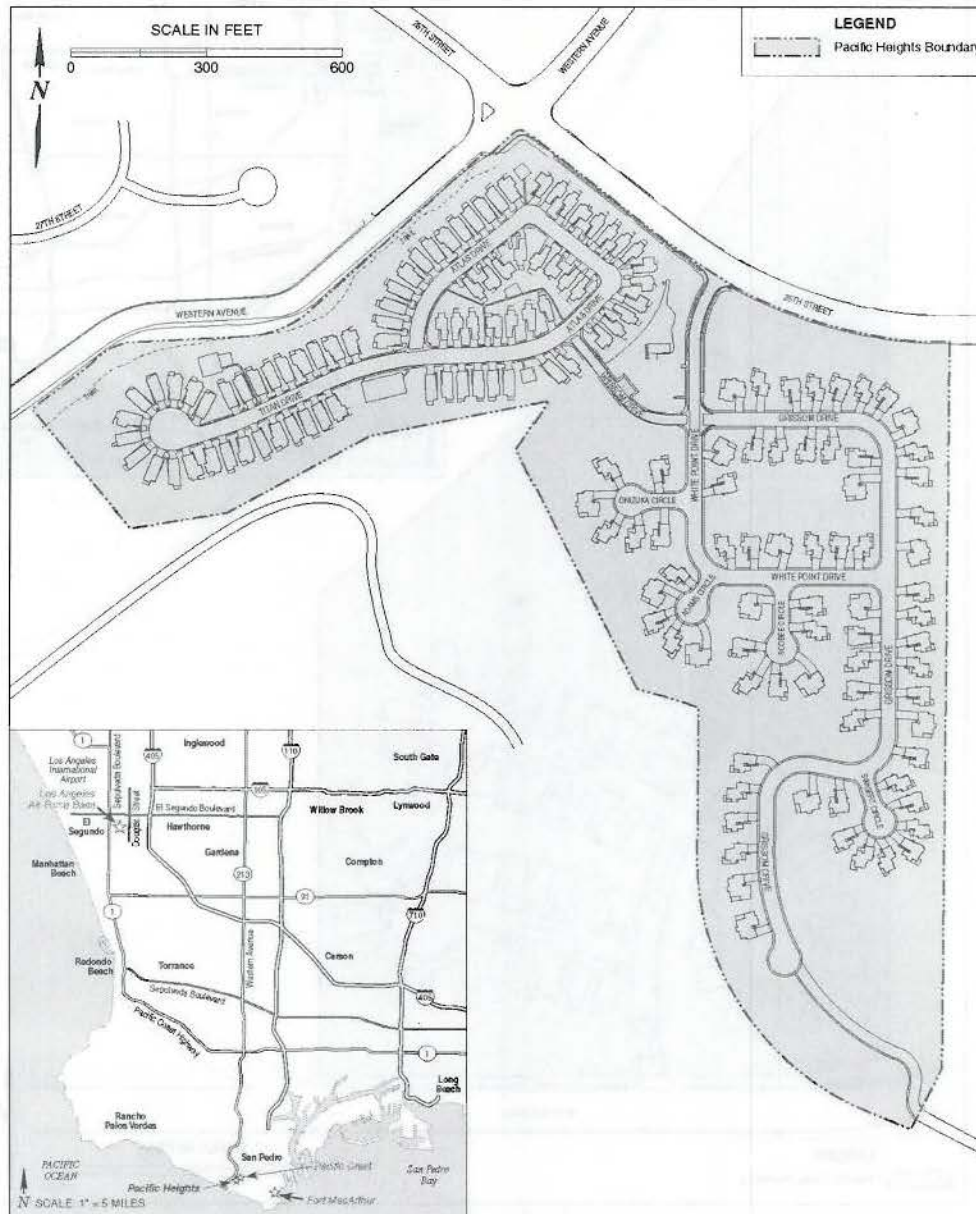


EA

Pacific Crest

FIGURE
1-3

1-5



EA

Pacific Heights

FIGURE
1-4

1-6

The western portion of the Pacific Heights neighborhood (Pacific Heights I) consists of 79 units built in the mid-1980s, similar in style to the Pacific Crest neighborhood. The eastern portion of Pacific Heights (Pacific Heights II) consists of 71 units designed in a California bungalow architectural style completed in 2000. The neighborhood does not contain any military commercial or service areas.

1.4. PURPOSE AND NEED

The purpose of this action is to enhance security and safety in MFH areas. To accomplish this, the Air Force proposes to construct a PV security solar lighting system throughout the MFH area to enhance safety and security while not increasing current electrical load requirements. The action is needed to ensure military families are provided safe and secure living areas.

1.5. NATIONAL ENVIRONMENTAL POLICY ACT

In accordance with NEPA, federal agencies are required to take into consideration potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore or enhance the environment through well-informed federal decisions. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process. The CEQ subsequently issued *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 Code of Federal Regulation [CFR] § 1500-1508). These regulations specify an EA be prepared to:

- Briefly provide sufficient analysis and evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a finding of no significant impact (FONSI);
- Aid in an agency's compliance with NEPA when no EIS is necessary; and
- Facilitate preparation of an EIS when one is necessary.

To comply with NEPA and other pertinent environmental requirements, such as the Endangered Species Act and the National Historic Preservation Act, and to assess impacts on the environment; the decision-making process includes a study of environmental issues related to the installation of the perimeter security lighting system at LAAFB.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1. INTRODUCTION

LAAFB proposes to install perimeter solar security lighting systems at four military housing areas in San Pedro, California. The PV lighting system is needed to enhance security and safety throughout the MFH area.

2.2. PROPOSED ACTION

The proposed action would install a PV powered Light Emitting Diode (LED) lighting system at the four military housing areas: Fort MacArthur, Pacific Crest and Pacific Heights I and II. A combination of PV panels and LED fixtures will be strung along the perimeter of MFH area, forming a comprehensive perimeter lighting system.

2.3. SECURITY SOLAR LIGHTING SYSTEM DETAILS

2.3.1. Operation

The PV powered LED Lighting system would be designed to provide perimeter outdoor lighting to complement and enhance existing lighting. The proposed PV lighting system would allow each PV panel and associated LED fixtures to be independent stand-alone units. The PV lighting infrastructure would be highly redundant, reliable and secure.

2.3.2. Physical Description.

The PV Security Lighting System would consist of approximately 169 PV powered single and double LED fixtures to be installed on existing metal fence or masonry wall. The fixtures would be approximately thirty feet apart and eight feet above ground level. Approximately 123 PV panels would be positioned throughout the perimeter of the MFH areas, on metal, wood and composite poles. The poles would range from eight to twenty-five feet high, depending on specific sighting requirements. PV panels would be spaced up to two-hundred feet apart. Associated conduits and wiring between PV panels and LED fixtures would be self contained. The components and dimensions for the PV panels and LED fixtures are summarized in Table 2-2.

Table 2-1. PV Lighting System Components

3. Component	4. Dimensions
Composite Poles	25-feet tall 12-inch diameter (base) 6-inch diameter (top)
Aluminum Poles	15 feet tall 4 X 4 X 4 in.
Single & Double LED Fixtures	4.63 x 2.84 x 8 inches
Wire Junction Box	8 x 8 x 4
Battery Box	12.13x 13.13 x 7.78 Inches
Conduits	¾ inch PVC

2.3.3. PV Powered LED Lighting System Maintenance and Testing

PV lighting systems require very little maintenance and testing. PV panels have a life expectancy of 20 years. They are self cleansing based on installation angle and normal rainfall. Bird spikes along the top edge keep panels from being used as roosts. LED fixtures have a minimum life expectancy of five years and are replaced with standard LED lamps using hand tools. Battery packs are low maintenance gel cells mounted in weather proof enclosures. Batteries have an expected life expectancy of five years and can be replaced with hand tools. Testing the function of the LED system is accomplished by unplugging the PV panel from the charge controller, which will cause a voltage drop to the controller and the controller would respond by actuating the LED fixtures.

2.2.12.3.4. Light Levels & Illumination Area

The lighting level would be maintained between 0.05 foot and 15 foot candles between LED fixture locations. Illuminated areas would be limited to the inside perimeter of the base fence line. Light spill outside of the base perimeter would be eliminated by fixture shading.

2.3.5. Fort MacArthur

The perimeter of Fort MacArthur would be ringed with approximately 280 dual LED light fixtures. The fixtures would be positioned on chain link fences, metal gates or masonry walls. The LED lighting would be powered by forty-eight two-inch by four-inch PV Panels positioned on an equal number of composite or aluminum poles ranging in height from eight to twenty-five feet. Pole heights will be adjusted as necessary to insure maximum exposure of PV panels to sun light. Additionally, poles would be individually sited to blend the PV poles and panels with nearby structures whenever possible. All PV panels would be independently wired via PVC conduits to 4 to 8 LED light fixtures.

Table 2-2. Proposed PV lighting System Components and Locations

Housing Area	Poll Height	Solar Power Unit	LED Fixtures
Fort MacArthur	4 X 8ft Composite poles	PV panel ground mounted below top of hedges	4 Dual 80W LED fixtures on black metal fence, total spacing up to 112 ft
Fort MacArthur	21 X 25 ft Composite Poles	Stand alone PV poles	8 Dual 170W LED fixtures on black metal fence, total spacing up to 224 ft
Fort MacArthur	5 X 10 ft Galvanized Poles	PV panels mounted on existing poles, panel not to exceed upper rail of chain link fence	4 Dual 80W LED fixtures on existing galvanized fence, total spacing up to 160 ft
Fort MacArthur	6 X 25 ft Composite poles	Stand alone PV poles mounted between houses	8 dual 170W LED fixtures on existing concrete wall with black pickets
Fort MacArthur	8 X 17 Ft Existing galvanized Fence	PV panels mounted on existing poles, panel not to exceed upper rail of	4 dual 80W LED fixtures on existing block wall, Spacing 120 ft
Fort MacArthur	16 X 25 ft composite Planes	Stand alone PV poles	8 dual 170W LED fixtures, mounted on 3 ft special support arms that extend light beyond hedgerow along Pacific Ave
Pacific Crest	2 X 25 ft Composite Poles	Stand alone PV poles	8 Dual 170W LED fixtures on black metal fence, total spacing up to 224 ft
Pacific Crest	8 X 25 ft Composite Poles	Stand alone PV poles, pole height adjusted based on clear sun path	8 Dual 170W LED fixtures on black metal fence, total spacing up to 224 ft
Pacific Crest	10 X 17ft Aluminum Poles	Attached new solar poles to existing concrete fence column	4 dual 80W LED fixtures on fence or column, spacing 112 ft
Pacific Crest	7 X 25 ft Composite poles	Stand alone street light	42w lamp & Cobra head on 6 ft arm Total spacing 112 ft
Pacific Heights I	10 x 25 ft composite poles	Stand alone PV poles	8 dual 80W LED fixtures mounted on existing chain link fence, total spacing 224
Pacific Heights I	6 X 17 ft Aluminum Poles	Stand alone PV poles, pole height adjusted based on clear sun path	8 dual 170W LED fixtures mounted on existing fence or column, total spacing 112 ft
White Point I	10 X 25 ft composite poles	Stand alone PV poles	8 dual 80W LED fixtures mounted on black metal fence, total spacing 224

Continued on following page

Housing Area	Poll Height	Solar Power Unit	LED Fixtures
Pacific Heights II	4 X 25 ft Composite poles	Stand alone PV poles	4 Dual 170W LED fixtures on chain link fence, total spacing up to 224 ft
Pacific Heights II	10 X 25 ft Composite Poles	Stand alone PV poles	8 Dual 170W LED fixtures on black metal fence, total spacing up to 224 ft

2.3.6. Pacific Crest

The perimeter of Pacific Crest would be ringed with approximately 127 dual LED light fixtures positioned on chain link fences, metal gates or masonry walls. The LED lighting would be powered by twenty-seven two inch by four inch PV Panels. They would be positioned on an equal number of composite or aluminum poles ranging in height from eight to twenty-five feet (pole heights will be adjusted as necessary to insure maximum exposure of PV panels to sun light). Poles would be sited to blend the PV poles and panels with nearby structures whenever possible. The PV panels would be independently wired via PVC conduits to between four to eight LED light fixtures.

2.3.7. Pacific Heights

The perimeter of Pacific Heights I and II would be ringed with 208 dual LED light fixtures positioned on chain link fences, metal gates or masonry walls. The LED lighting would be powered by forty two-inch by four inch PV Panels positioned on composite or aluminum poles ranging in height from eight to twenty-five feet (pole heights will be adjusted as necessary to ensure maximum exposure of PV panels to sun light). Poles would be individually sited to blend the PV poles and panels with nearby structures whenever possible. PV panels would be independently wired via PVC conduits to between four to eight LED light fixtures.

2.4. ALTERNATIVES

2.4.1. Alternative 1: Install Conventionally Powered Perimeter Lighting System

For this alternative, a conventional lighting system powered by the local power grid would be installed throughout the perimeter of the MFH areas, negating the need for PV panels and the associated poles. However, the electrical demand for the MFH areas would increase.

2.4.2. Alternative 2 No Action

If the No-Action Alternative were selected, LAAFB would not install a perimeter security lighting system in MFH area. Currently, a comprehensive perimeter lighting system does not exist at any of the four housing areas associated with LAAFB. With the implementation of the no action alternative, the status quo would be maintained and the desired security enhancement would not be achieved.

3.0. AFFECTED ENVIRONMENT

This section describes relevant existing environmental conditions for resources potentially affected by the proposed action and identified alternatives. In compliance with the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) 989; the description of the affected environment focuses on only those aspects potentially subject to impacts.

3.1. AIR QUALITY

3.1.1. Definition of Resource

Air quality is affected by stationary sources (e.g., industrial development) and mobile sources (e.g., motor vehicles). Air quality at a given location is a function of several factors, including the quantity and type of pollutants emitted locally and regionally, and the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

3.1.1.1. Criteria Pollutants

Air quality in a given location is determined by the concentration of designated pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA) for criteria pollutants including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 microns in diameter (PM_{10}) and 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

Ozone (O_3). The majority of ground-level (or terrestrial) O_3 is formed as a result of complex photochemical reactions in the atmosphere involving volatile organic compounds (VOC), nitrogen oxides (NO_x), and oxygen. O_3 is a highly reactive gas that damages lung tissue, reduces lung function, and sensitizes the lung to other irritants. Although *stratospheric* O_3 shields the earth from damaging ultraviolet radiation, terrestrial O_3 is a highly damaging air pollutant and the primary source of smog.

Carbon Monoxide (CO). CO is a colorless, odorless, poisonous gas produced by incomplete burning of carbon in fuel. The health threat from CO is most serious for those who suffer from cardiovascular disease; particularly those with angina and peripheral vascular disease.

Nitrogen Dioxide (NO₂). NO₂ is a highly reactive gas that can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Repeated exposure to high concentrations of NO₂ may cause acute respiratory disease in children. Because NO₂ is an important precursor in the formation of O₃ or smog, control of NO₂ emissions is an important component of overall pollution reduction strategies. The two primary sources of NO₂ in the U.S. are fuel combustion and transportation.

Sulfur Dioxide (SO₂). SO₂ is emitted primarily from stationary source coal and oil combustion, steel mills, refineries, pulp and paper mills, and from non-ferrous smelters. High concentrations of SO₂ may aggravate existing respiratory and cardiovascular disease; asthmatics and those with emphysema or bronchitis are the most sensitive to SO₂ exposure. SO₂ also contributes to acid rain, which can lead to the acidification of lakes and streams and damage trees.

Particulate Matter (PM₁₀ and PM_{2.5}). Particulate matter (PM) is a mixture of tiny particles that vary greatly in shape, size and chemical composition; and can be comprised of metals, soot, soil and dust. PM₁₀ includes larger, coarse particles; whereas PM_{2.5} includes smaller, fine particles. Sources of coarse particles include crushing or grinding operations and dust from paved or unpaved roads. Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. Exposure to PM₁₀ and PM_{2.5} levels exceeding current standards can result in increased lung- and heart-related respiratory illness. The USEPA concluded that finer particles are more likely to contribute to health problems than those greater than 10 microns in diameter. Both PM₁₀ and PM_{2.5} are monitored and regulated. However, the USEPA has not yet designated attainment and non-attainment areas for PM_{2.5}.

Airborne Lead (Pb). Airborne lead can be inhaled directly or ingested indirectly by consuming lead-contaminated food, water or non-food materials such as dust or soil; fetuses, infants, and children are most sensitive to Pb exposure. Pb has been identified as a factor in high blood pressure and heart disease. Exposure to Pb has

declined dramatically in the last 10 years as a result of the reduction of Pb in gasoline and paint, and the elimination of Pb from soldered cans.

3.1.1.2. Clean Air Act Amendments

The Clean Air Act Amendments (CAAA) of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. To this end, USEPA requires each state to prepare a State Implementation Plan (SIP). A SIP is a compilation of goals, strategies, schedules and enforcement actions that will lead the state into compliance with all NAAQS. Areas not in compliance with a standard can be declared *nonattainment* areas by USEPA or the appropriate state or local agency. In order to reach *attainment*, NAAQS may not be exceeded more than once per year. A *nonattainment* area can reach *attainment* when NAAQS have been met for a period of ten consecutive years. During this time period, the area is in *transitional attainment*, also termed *maintenance*.

3.1.2. Existing Conditions

3.1.2.1. Climate

The climate in the Community of San Pedro is classified as having a mild, year-round, Mediterranean-like climate. Average maximum temperatures range from 66 degrees Fahrenheit (°F) in January to 75°F in August. Average lows range from 46°F in January to 57°F in August. Average annual precipitation is about 14.8 inches, most of which occurs between November and March (National Oceanic and Atmospheric Administration [NOAA] 2005).

3.1.2.2. Local Air Quality

The LAAFB housing areas are located in the South Coast Air Basin (SCAB), which is under the jurisdiction of the South Coast Air Quality Monitoring District (SCAQMD). The SCAQMD is the agency responsible for attaining state and federal clean air standards for the SCAB. Eighteen air quality monitoring stations are located within Los Angeles County, and all criteria pollutants are measured within the county. According to USEPA air data, the county exceeded NAAQS for PM_{2.5} and both 1-hour and 8-hour O₃ in 2003 and 2004 (see Figure 3-1).

Los Angeles County is currently designated by the USEPA as a *severe nonattainment* area for ozone (8-hour standard), and a *nonattainment* area carbon monoxide, PM₁₀, and PM_{2.5} (USEPA 2007).

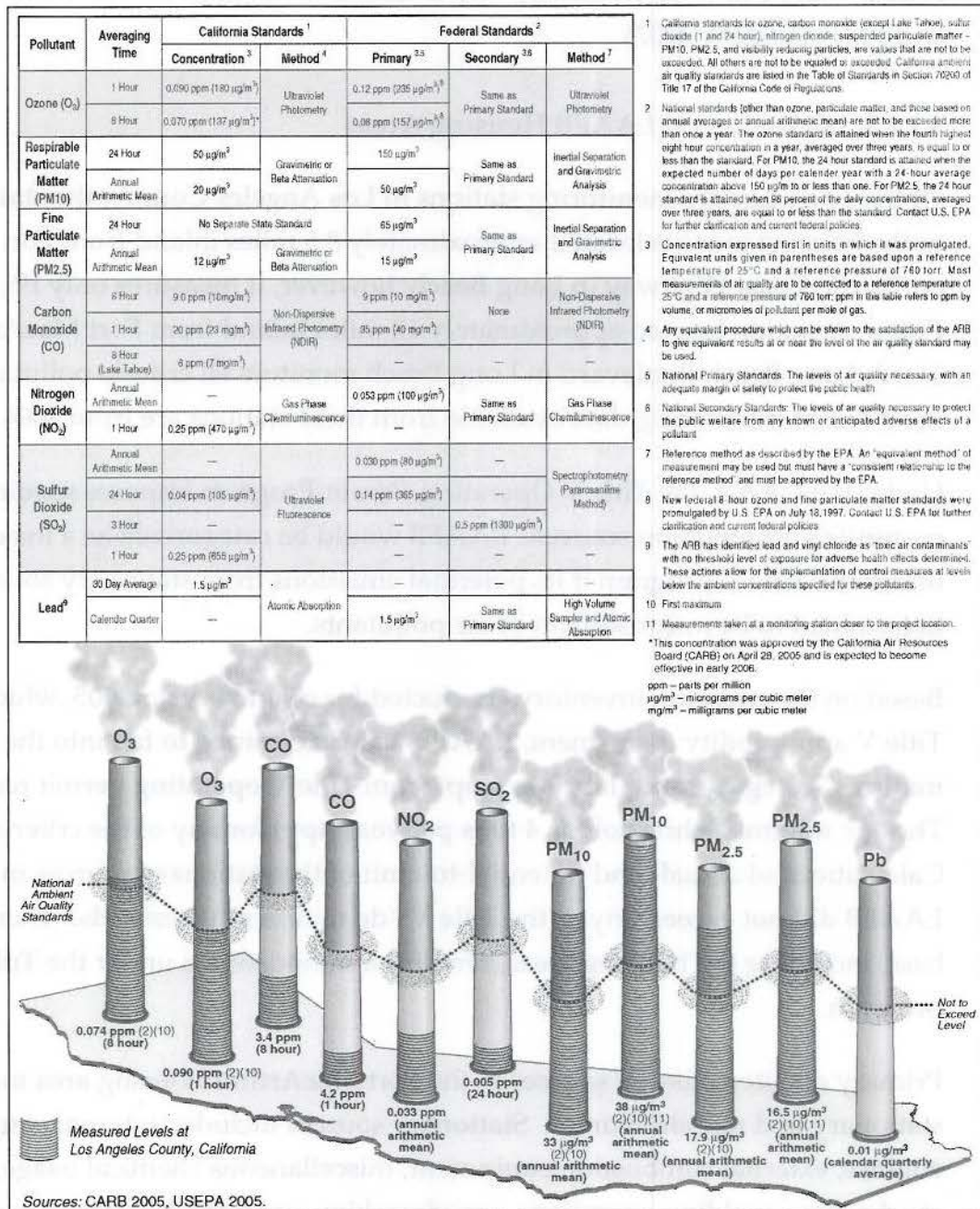
3.1.2.3. Emissions at LAAFB Housing Areas

Of the 18 air quality monitoring stations in Los Angeles County, the station closest to the housing areas is located approximately 8.5 miles inland from Fort MacArthur on Pacific Coast Highway in Long Beach; however, it measures only Pb, PM₁₀ and PM_{2.5}. A station located approximately 10 miles inland from Fort MacArthur on North Long Beach Boulevard in Long Beach monitors all criteria pollutants. The most recent monitoring data available from these stations are from 2004.

Under the CAAA, the Title V Operating Permit Program imposes requirements for permitting air emission sources. LAAFB would be categorized as a major source under the Title V program if its potential emissions from stationary sources are determined to be major sources of air pollutants.

Based on the emission inventory conducted for calendar year 2005, which included a Title V applicability assessment, LAAFB was determined to fall into the “de minimis” category, and thus is exempt from Title V operating permit requirements. The “de minimis” threshold is 4 tons per year (tpy) for any of the criteria pollutants. Calculations of actual- and potential-to-emit of the stationary sources in 2003 shows LAAFB did not exceed any of the Title V “de minimis” thresholds. Therefore, the base, including the housing areas, remains a minor source under the Title V program.

Primary on-site emission sources at the Fort MacArthur housing area include stationary and mobile sources. Stationary sources include: internal combustion engines, external combustion equipment, miscellaneous chemical usage, charbroilers, welding operations, woodworking, grounds maintenance equipment, and diesel fuel storage tanks.



EA National Ambient Air Quality Standards and Measured Emission Levels (2004) Long Beach/San Pedro Area, Los Angeles County, California FIGURE 3-1

LAND USE CATEGORY	L _{dn} VALUES (In dBA)								KEY
	55	60	65	70	75	80	85	90	
RESIDENTIAL – SINGLE FAMILY, DUPLX, MOBILE HOMES									Clearly Acceptable
RESIDENTIAL – MULTIPLE FAMILY, DORMITORIES									
TRANSIENT LODGING									Normally Acceptable
SCHOOL CLASSROOMS, LIBRARIES, CHURCHES									
HOSPITALS, NURSING HOMES									Normally Unacceptable
AUDITORIUMS, CONCERT HALLS, MUSIC SHELLS									
SPORTS ARENAS, OUTDOOR SPECTATOR SPORTS									Clearly Unacceptable
PLAYGROUNDS, NEIGHBORHOOD PARKS									
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETERIES									
OFFICE BUILDINGS									
COMMERCIAL – RETAIL, MOVIE THEATERS, RESTAURANTS									
COMMERCIAL – WHOLESALE, SOME RETAIL, INDUSTRIAL, MANUFACTURING, UTILITIES									
MANUFACTURING, COMMUNICATION (NOISE SENSITIVE)									
LIVESTOCK FARMING, ANIMAL BREEDING									
AGRICULTURAL (EXCEPT LIVESTOCK), MINING, FISHING									
PUBLIC RIGHT-OF-WAY									
EXTENSIVE NATURAL RECREATION AREAS									

Source: U.S. Department of Housing and Urban Development 1991

EA

Recommended Land Use for L_{dn}-Based Noise Zones

FIGURE
3-2

3-8

The most recent air emissions inventory data available LAAFB housing areas evaluates the actual and potential stationary source emissions (Table 3-1) for calendar year 2005. The data present emissions for CO, NO_x, PM₁₀, SO_x, VOCs, single Hazardous Air Pollutant (HAP), and total HAPs (including Pb) (LAAFB 2003).

Table 3-1. Summary of Actual and Potential Stationary Source Air Emissions at LAAFB (Calendar Year 2005)

Pollutant	Actual Emissions (tpy)	Potential Emissions and Permit Limits (tpy)
Carbon Monoxide (CO)	1.9	75.5
Nitrogen Oxides (NO _x)	2.4	54.3
Particulate Matter (PM ₁₀)	0.29	6.7
Sulfur Dioxide (SO ₂)	0.022	0.6
Volatile Organic Compounds (VOCs)	1.3	10.9
Hazardous Air Pollutants (including Pb)	2.8	3.0

Note: tpy - tons per year
Source: LAAFB 2007.

3.2. NOISE

3.2.1. Definition of Resource

Noise is generally defined as unwanted sound and can be any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human responses to noise vary depending on the type and characteristics of the noise, distance between the noise source and receptor, receptor sensitivity, and time of day.

Due to wide variations in sound levels, sound is measured in decibels (dB), which are based on a logarithmic scale (e.g., a 10-dB increase corresponds to a 100-percent increase in perceived sound). Under most conditions, a 3-dB change is necessary for noise increases to be noticeable to humans (Biels and Hansen 1998). Sound

measurement is further refined by using an A-weighted decibel scale (dBA) that emphasizes the range of sound frequencies most audible to the human ear (between 1,000 and 8,000 cycles per second).

The day-night average sound level (L_{dn}) is the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. The 10-dB penalty is intended to compensate for generally lower background noise levels and increased annoyance associated with noise events occurring during the quieter nighttime hours. L_{dn} is the preferred noise metric of the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), Federal Aviation Administration (FAA), USEPA, the Veteran's Administration, and U.S. Department of Defense (DOD) (Federal Interagency Committee on Noise [FICON] 1992).

3.2.1.1. Land Use Guidelines

Guidelines established by the FICON are used by HUD to determine acceptable levels of noise exposure for various land use categories. Land use categories most sensitive to ambient noise are residential, institutional, cultural, and some recreational uses. Industrial land uses are the least sensitive to surrounding noise, largely due to the inherently high levels of ambient noise associated with industrial activities.

Construction activities may occur anywhere on the site and result in disturbance to on-site personnel or off-site noise-sensitive receptors (e.g., housing areas and schools). However, construction noise tends to be localized and temporary and can be reduced through use of special equipment or scheduling restrictions.

The City of Los Angeles General Plan Noise Element identified 80 dB day-night average as the noise threshold for schools, libraries, churches, hospitals and nursing homes (City of Los Angeles 1999).

3.2.1.2. Ambient Noise

Ambient background noise in urbanized areas typically varies from 60 to 70 dBA but can be higher. Suburban neighborhoods experience ambient noise levels of approximately 45 to 50 dBA (USEPA 1973).

3.2.2. Existing Conditions

3.2.2.1. Regional Setting

The community of San Pedro is characteristic of a suburban environment; the setting is dominated by housing and light industry, adjacent to the Pacific Ocean and the Los Angeles harbor in the Southern California region.

3.2.2.2. Local Setting

The military family housing (MFH) areas associated with LAAFB are geographically separated from the base by approximately 20 miles. Further, LAAFB does not maintain an inventory of aircraft and therefore is not a significant source of noise. Consequently, an Air Installation Compatible Use Zone (AICUZ) program is not in effect (LAAFB 2004). The noise environment is characteristic of a suburban environment.

3.3. LAND USE

3.3.1. Definition of Resource

Land use comprises natural conditions or human-modified activities occurring at a particular location. Human-modified land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational and other developed use areas. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially designated or environmentally sensitive areas.

3.3.2. Existing Conditions

3.3.2.1. Local Land Use

LAAFB housing areas Fort MacArthur, Pacific Crest and Pacific Heights I & II are located within the community of San Pedro on the Palos Verdes Peninsula within the city limits of Los Angeles, California. The housing areas are located approximately 20 miles from LAAFB, which is in El Segundo, California. The community of San Pedro occupies a total land area of 3,626 acres within the

City of Los Angeles, which comprises a total land area of 4,081 square miles. San Pedro is a coastal community located adjacent to the planning community of Wilmington-Harbor City, the Port of Los Angeles, and the City of Rancho Palos Verdes. Land use in San Pedro dominated by high- to low-medium density residential, which accounts for 63 percent of the land use. Land use in the vicinity of the housing areas consists of mostly low-density, single-family residential (LAAFB 2004).

Land use adjacent to Fort MacArthur includes a combination of mixed residential to the north, south and west; light industrial to the north; light commercial to the west; and public areas including Cabrillo Marine Aquarium, Cabrillo Aquarium Beach and Fishing Pier, and a pedestrian walkway to the east. Land use adjacent to Pacific Crest and Pacific Heights includes a mix of primarily residential and some commercial. In addition, White Point Park, which offers an overlook of the Pacific Ocean, borders Pacific Heights to the south (LAAFB 2004).

The California Coastal Commission is responsible for regulating construction projects located within the California coastal zone which may have a direct and significant impact on coastal waters. San Pedro is partially within the coastal zone. The entire Fort MacArthur and Pacific Heights housing areas and the area south of Perigee Circle in the Pacific Crest housing area are located in the coastal zone (LAAFB 2004).

3.3.2.2. Local Land Use Policies and Plans

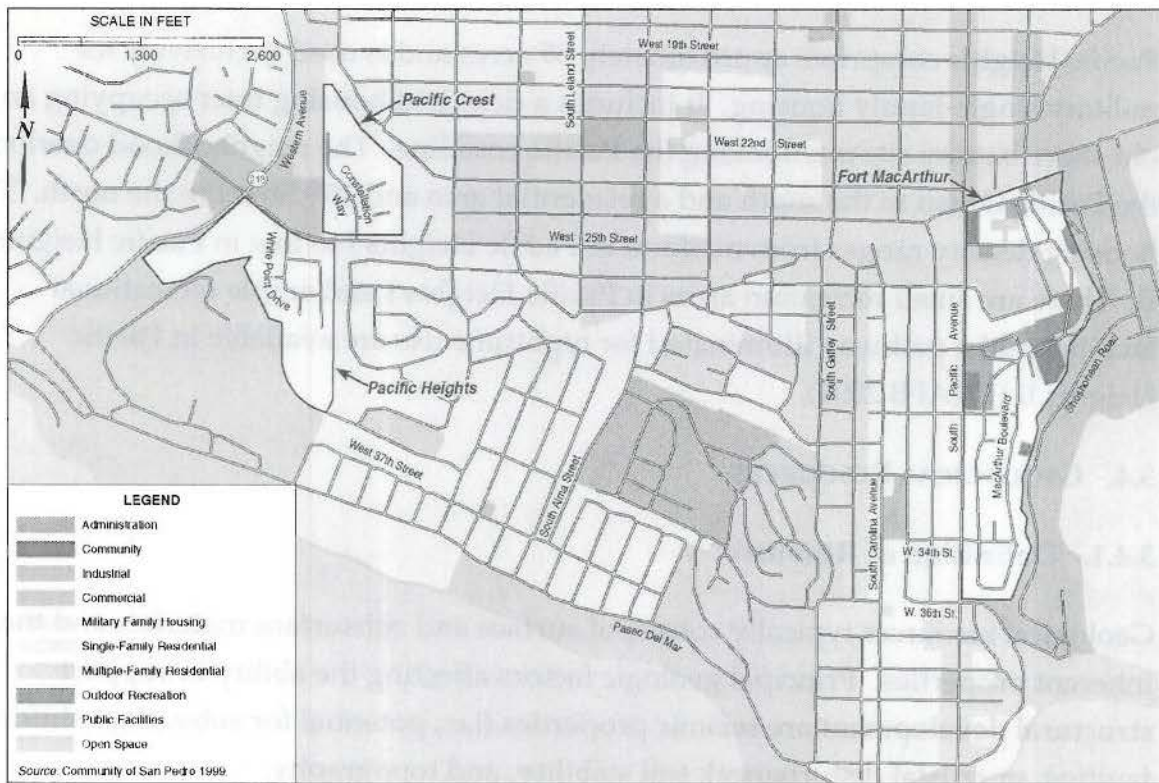
San Pedro's *Specific Plan* is the implementive ordinance of the local coastal program for the portion of the community located within the coastal zone. The regulations of the *San Pedro Specific Plan* are in addition to the regulations set forth within Chapter 1 of the *Municipal Code* of the City of Los Angeles. The *San Pedro Specific Plan* addresses issues related to access, housing, hazards, new development and visual resources; promotes a sense of community consistent with San Pedro's maritime heritage; provides procedures to facilitate the establishment of a Historic Preservation Overlay in the Old San Pedro Area; protects scenic and visual qualities of coastal area; and preserves access to the beach and recreation areas identified within the plan (Community of San Pedro 1990).

The *Los Angeles Air Force Base General Plan* (2005) is an informational and assessment document to facilitate decision-making on land use, development and construction activities. The plan builds upon information contained within the Los Angeles AFB 2000 General Plan, component plans, supporting studies, maps and graphics, municipal plans, zoning ordinances, and additional documentation as required with respect to the physical development of the LAAFB. The plan summarizes the base's capability for future growth and reviews the base's stewardship of natural and cultural resources and compliance with environmental laws and regulations. Planned future land uses immediately adjacent to the LAAFB housing areas include the Pacific Corridor Redevelopment Project, which will extend to 22nd Street, immediately north of Fort MacArthur. This project is focused on commercial-retail improvements, creation of pedestrian-oriented facilities, and high-density multi-family residential housing. Additionally, the Port of Los Angeles is in the early stages of the large scale San Pedro Waterfront and Promenade improvement project immediately adjacent to Fort MacArthur. This project will involve tourist-oriented recreation, historic preservation, and business opportunities (LAAFB 2004).

The *Los Angeles Air Force Base Facilities Excellence Plan* recognizes existing cultural, environmental, and climatic conditions at LAAFB and defines the appropriate styles, finishes, and materials to be used to achieve the best facility life-cycle costs. An objective of the plan is to maximize the enjoyment and productivity of the people living and working at LAAFB. The primary components of the plan include: architecture; building interior standards; landscape development; hardscape standards; site furnishings; infrastructure and equipment standards; and maintenance, revisions, and implementation.

3.3.2.3. Land Use at LAAFB Housing Areas

Fort MacArthur occupies 91 acres in the coastal zone of San Pedro in the City of Los Angeles. For planning purposes, six generalized land use categories are defined for Fort MacArthur: administration, community services, industrial, family housing, outdoor recreation, and open space (Figure 3-3). Most of Fort MacArthur located south of Arthur MacArthur Boulevard is family housing. The northern part of Fort MacArthur has a large open space, the parade grounds, surrounded by family housing, recreational areas, and administration (LAAFB 2004). Also in the northern part of Fort MacArthur, the open space area, Patton Quadrangle, is



Land Use in the Vicinity of Fort MacArthur, Pacific Crest, and Pacific Heights

FIGURE
3-3

surrounded by community service facilities and dormitory housing. There is a small patch of land designated for industrial use in the northeast corner of the housing area. There is also a historic district in Fort MacArthur, which consists of historic homes constructed in 1918 along Quartermaster Road; newer family housing centered on Quartermaster Court; and the community facilities and dormitory housing surrounding Patton Quadrangle (LAAFB 2005).

Pacific Crest comprises approximately 22 acres and is almost exclusively used for military single-family housing. It overlooks the area historically known as White Point on a ridgeline formerly known as Old Bogdanovitch Park. The neighborhood is positioned high on a coastal terrace overlooking the Pacific Ocean to the south. Housing is medium density, similar to surrounding private subdivisions. It is

interspersed with small parks and open spaces that offset the residential density (LAAFB 2004).

Pacific Heights comprises approximately 39 acres and is used exclusively for military single-family housing. It includes a detached housing tract occupying an old shore battery site overlooking the Pacific coastline. The neighborhood overlooks the Pacific Ocean to the south and a residential area and 25th Street to the north. The housing density ranges from medium in Pacific Heights I to low in Pacific Heights II. There are small recreation areas in Pacific Heights I and ample recreational facilities and a pathway illuminated for nighttime use are available in Pacific Heights II (LAAFB 2004).

3.4. GEOLOGICAL RESOURCES

3.4.1. Definition of Resource

Geological resources typically consist of surface and subsurface materials and their inherent properties. Principal geologic factors affecting the ability to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography.

The term *soil*, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support man-made structures and facilities. Soils are typically described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use.

Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (e.g., mountains) and their influence on human activities.

3.4.2. Existing Conditions

3.4.2.1. Regional Conditions

Geology

Southern California geology is defined by transverse ranges; east-west ranges created by the area's history of tectonic activity. The geological province of the transverse ranges is bound on the north by the San Andreas Fault. It incorporates a greater spectrum of rock types and structures than any other geological unit in the state, including rocks formed during all ages except Archaen and some parts of the early Paleozoic. Los Angeles County sits in the Los Angeles Basin of the Transverse Ranges bordered by the Santa Monica Mountains on the north, the Puente Hills and Whittier fault on the east, and Santa Ana Mountains and San Joaquin Hills on the south and the Palos Verdes Peninsula on the west (Norris and Web 1990). Major faults underlying the Los Angeles Basin include the Newport-Inglewood fault, Whittier fault, Santa Monica fault, and the Palos Verdes fault.

Bedrock in the vicinity of the three housing areas consists of Jurassic Shist and Miocene age volcanics. Immediately west of the project area is the Palos Verdes fault. The fault is a northwest-to-southwest trending feature with little surficial displacement in the last 10,000 years. This faulting has resulted in exposure of Jurassic age Catalina Schist, Miocene age volcanics, and the Miocene Monterey Formation (LAAFB 1998b).

Soils

Soils within the Diablo-Altamont Association are found within the community of San Pedro. Soils within this association typically consist of marine sandstone, shale and breccia.

Topography

The community of San Pedro is located in the southwestern block of the Los Angeles Basin in the Transverse Range Province of Southern California. The topography of the community is composed of low hills and drainages that direct the flow of runoff

waters. The topography of the area ranges from sea level to 1,480 feet above mean sea level (msl) (LADPW 2004).

3.4.2.2. Geological Resources at Fort McArthur, Pacific Crest, and Pacific Heights

Geology

The community of San Pedro is located on the Los Angeles Coastal Plain in the western portion of the Transverse Ranges Geomorphic Province. Sediments in the Los Angeles Basin were deposited in the Miocene Epoch 5 million to 23.5 million years ago. Initially, fine particulate marine sediments were deposited, then as sea levels dropped, coarser particulate sediments were eroded from the local mountain ranges which formed stratified alluvial fans on the Los Angeles Coastal Plain from the late Cretaceous Period to the Holocene Epoch. In addition to the Tertiary alluvium of the coastal plain, soils in the region include Quaternary non-marine terrace deposits. The most recent deposits are composed of Holocene and recent coarse cobble gravels backfilled by rises in sea levels, and fine sands, silts, and clays deposited by river flows (LADWP 2004). Fort MacArthur, Pacific Crest, and Pacific Heights are located approximately 2 kilometers south of the active Palos Verdes fault and Fort MacArthur lies along the active Cabrillo fault (U.S. Air Force 2001).

Soils

Fort MacArthur, Pacific Crest, and Pacific Heights are situated on a sandstone bedrock bluff overlooking the Los Angeles Harbor and Pacific Ocean.

Approximately 12 types of soils within the Diablo-Altamont Association are found in the vicinity of these housing areas, ranging slightly in texture, natural drainage, and slope. Soils of the Diablo-Altamont Association are typically comprised of marine sandstone, shale and breccia. Fort MacArthur is situated on Montezuma Clay Adobe which consists of excessively drained clays. Runoff in these soils is very slow with only a slight erosion hazard. Pacific Crest is situated on Diablo Clay Loam and Altamont Clay Loam which consists of well-drained clay. Pacific Heights is situated on Altamont Clay Loam (Figure 3-4). Runoff in these soils is slow in dry conditions and rapid in wet conditions and there is a slight to severe erosion hazard (LADWP 2004).

Topography

The elevation of Fort MacArthur ranges from 40 to 70 feet above msl; Pacific Crest ranges in elevation between 350 and 420 feet above msl; and Pacific Heights is located between 250 and 380 feet above msl (U.S. Air Force 2001).



3.5. WATER RESOURCES

3.5.1. Definition of Resource

Water resources analyzed in this study encompass surface and groundwater and floodplains. Surface water resources include lakes, rivers and streams and are important for a variety of reasons including ecological, economic, recreational, aesthetic, and human health. Groundwater comprises subsurface water resources and is an essential resource in many areas as it is used for potable water, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geology.

Water resources include watershed areas affected by existing and potential runoff and hazards associated with 50-, 100-, and 500-year floodplains. Floodplains are belts of low, level ground present on one or both sides of a stream channel and subject to either periodic or infrequent inundation by floodwater. Inundation dangers associated with floodplains prompted legislation that largely limits development in these areas. For example, Executive Order 11988, *Floodplains Management*, and AFI 32-7604, require actions to minimize flood risks and impacts. Under this order, development alternatives must be considered, and building requirements must be in accordance with specific Federal, state, and local floodplain regulations.

3.5.2. Existing Conditions

3.5.2.1. Regional Setting

Surface Water

The community of San Pedro is located within the Dominguez Watershed. Major water bodies within the watershed include the Dominguez Channel, Wilmington Drain, Torrance/Carson Channel, Cabrillo Beach, Machado Lake, and Los Angeles and Long Beach Harbors. An estimated 62 percent of the land within the watershed is considered impervious and stormwater runoff is collected through a series of underground stormdrains which drain into the Dominguez Channel and eventually empty into Los Angeles Harbor (LADWP 2004).

Groundwater

The community of San Pedro is underlain by the West Coast groundwater basin within the Dominguez Watershed. The West Coast Basin is comprised of four aquifers: Gage, Lynwood, Silverado, and Sunnyside. The West Coast Basin was significantly altered in the late 1800s and early 1900s due to groundwater pumping. In the 1920s, the basin dropped below sea level and the aquifers were impacted by saltwater intrusion. Today, the City of Los Angeles is entitled to 92,400 acre-feet (af) from all of its groundwater basins, which provides approximately 15 percent of the total drinking water supply for the city. The West Coast Basin comprises approximately 2 percent of this total or 1,500 af (LADWP 2004). Remaining water

supply needs are provided by water imported from the Colorado River (LADWP 2005).

Floodplains

Floodplains in the vicinity of the LAAFB housing areas are associated with the Dominguez Channel and Machado Lake, both of which are north of the three housing areas.

3.5.2.2. Water Resources at Fort McArthur, Pacific Crest, and Pacific Heights

Surface Water

No surface water flows are present on or adjacent to any of the three housing areas. Surface water runoff is directed into a system of underground storm drains managed by the City of Los Angeles and direct runoff into the Los Angeles Harbor (LAAFB 2000).

Groundwater

The principal source of groundwater in the vicinity of the three housing areas is the Lynwood aquifer, a semi-confined unit comprised of coarse gravel, sand, silt and clay. Groundwater is approximately 122 meters below ground surface. No wells are present on any of the three housing areas. Groundwater in this area is generally of good quality; although in the past aquifers have had large levels of saltwater intrusion (LADWP 2004).

Floodplains

The delineated regional floodplain is not in the vicinity of the three housing areas; therefore, Fort MacArthur, Pacific Crest, and Pacific Heights neither affect nor are affected by floodplain issues.

3.6. BIOLOGICAL RESOURCES

3.6.1. Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive biological resources are defined as those plant and animal species listed as threatened or endangered, or proposed as such, by

the U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Game (CDFG).

Wetlands are defined by the U.S. Army Corps of Engineers (USACOE) and USEPA as “those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR 328.3 [b]; 1984). Wetlands provide a variety of functions including groundwater recharge and discharge; floodflow alteration; sediment stabilization; sediment and toxicant retention; nutrient removal and transformation; aquatic and terrestrial diversity and abundance; and uniqueness. Three criteria are necessary to define wetlands: vegetation (hydrophytes), soils (hydric), and hydrology (frequency of flooding or soil saturation). *Hydrophytic vegetation* is classified by the estimated probability of occurrence in wetland versus upland (non-wetland) areas throughout its distribution. *Hydric soils* are those that are saturated, flooded, or ponded for sufficient periods during the growing season and that develop anaerobic conditions in their upper horizons (i.e., layers). *Wetland hydrology* is determined by the frequency and duration of inundation and soil saturation. Permanent or periodic water inundation or soil saturation are considered significant forces in wetland establishment and proliferation. Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and Executive Order 11990, *Protection of Wetlands*.

3.6.2. Existing Conditions

3.6.2.1. Regional Setting

Vegetation

The majority of natural vegetation in the community of San Pedro occurs along the San Pedro Bay. Vegetation is characteristic of coastal sage scrub and coastal salt marsh communities. Typical species include California sagebrush (*Artemisia californica*), deerweed (*Lotus scoparius*), pickleweed (*Salicornia virginica*), cordgrass (*Spartina foliosa*), and jaumea (*Jaumea carnosa*) (LADWP 2004).

Wildlife

Avian species in the San Pedro area are typically water-associated and include: Surf Scooter (*Melanitta perspicillata*), Western Gull (*Larus occidentalis*), Elegant Tern (*Sterna elegans*), California Brown Pelican (*Pelecanus occidentalis californicus*), Heermann's Gull (*Larus heermanni*), and Western Grebe (*Aechmophorus occidentalis*). Ring-billed Gull (*Larus delawarensis*), Black-bellied Plover (*Pluvialis squatarola*), Double-crested Cormorant (*Phalacrocorax auritus*), California Least Tern (*Sterna antillarum browni*), and Brandt's Cormorant (*Phalacrocorax penicillatus*) are also present, at least seasonally (Port of Los Angeles 2004). Mammals common in the area are typical of an urban environment such as the California ground squirrel (*Spermophilus beecheyi*).

Threatened and Endangered Species

A number of animal and plant species within the San Pedro area have been state- and/or federally listed as threatened or endangered as summarized in Table 3-2. The California Least Tern (*Sterna antillarum browni*) and the Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*) are the only two animals designated as state endangered within the area. The nearest known nesting area for the California Least Tern in the vicinity of the project area is Terminal Island, in the Long Beach Harbor. In addition, only two plants species, Salt-marsh bird's beak (*Cordylanthus maritimus ssp. maritimus*) and Lyon's pentachaeta (*Pentachaeta lyonii*) have been listed as state endangered (CDFG 2005).

**Table 3-2. Special Status Plant and Animal Species of
USGS Quad San Pedro, Los Angeles County, CA**

Scientific Name	Common Name	State Status	Federal Status
VASCULAR PLANT			
<i>Cordylanthus maritimus</i> ssp. <i>maritimus</i>	Salt-marsh bird's beak	SE	FE
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta	SE	FE
ANIMALS			
Birds			
<i>Poliophtila californica californica</i>	Coastal California Gnatcatcher	SC	FT
<i>Sterna antillarum browni</i>	California Least Tern	SE	FE
Insects			
<i>Glaucopsyche lygdamus palosverdesensis</i>	Palos Verde blue butterfly	SE	FE
Mammals			
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	SC	No status

Notes:

FE - Federally Endangered

FT - Federally Threatened

E - State Endangered

T - State Threatened

SC - State Species of Concern

SE - State Endangered

Source: CDFG 2005.

Wetlands

Two small estuarine wetlands occur within the San Pedro area — one 3.2-acre man-made wetland in the Cabrillo marine area and a 1.6-acre wetland within the White Point Reserve (USFWS 2005).

3.6.2.2. Biological Resources at Fort McArthur, Pacific Crest, and Pacific Heights

Vegetation

The predominant vegetation type at the three housing areas is seeded grass/lawns with some planted trees. No native/natural vegetation occurs within Fort MacArthur, Pacific Crest, or Pacific Heights.

Wildlife

Wildlife species which occur on Fort MacArthur, Pacific Crest and Pacific Heights typically consists of species adapted for urban areas including the American crow (*Corvus brachyrhynchos*), rock dove or pigeon (*Columba livia*), white-crowned sparrow (*Zonotrichia leucophrys*), and California ground squirrel (U.S. Air Force 2001).

Threatened and Endangered Species

As of 2001, no endangered or threatened wildlife species were known to exist at Fort MacArthur, Pacific Crest, or Pacific Heights. Sensitive plant communities have been recorded in the vicinity of Fort MacArthur. Southern Coastal Bluff Scrub, a state-listed threatened plant community, lies immediately adjacent to the fence line outside the southern slope of Fort MacArthur (U.S. Air Force 2001).

Wetlands

The eastern portion of Fort MacArthur along the Los Angeles Harbor and north of 32nd Street is classified as a wetland per the 1994 National Wetlands Inventory (EDR 1999). In addition, two wetlands exist in the immediate vicinity of the project areas. The Salinas de San Pedro is a 3.2-acre salt marsh located near the Cabrillo Marine Aquarium on Shoshonean Road just below the southern bluff of Fort MacArthur. In addition, White Point Reserve, located adjacent to the southern edge of Pacific Heights, contains a 1.6-acre intertidal marine wetland (USFWS 2005) (Figure 3-5).



3.7 Transportation and Circulation

3.7.1. Definition of Resource

Transportation and circulation refer to the movement of vehicles throughout a road and highway network. Primary roads are principal arterials, such as major interstates, designed to move traffic and not necessarily to provide access to all adjacent areas. Secondary roads are arterials such as rural routes and major surface streets which provide access to residential and commercial areas, hospitals, and schools.

3.7.2. Existing Conditions

3.7.2.1. Regional and Local Circulation

Regional access to San Pedro is provided by the Harbor Freeway (Interstate 110) and the Terminal Island Freeway (State Route 47). Other freeways that serve the area include the Long Beach Freeway (Interstate 710) and the San Diego Freeway (Interstate 405). Interstate 110, a north-south highway that extends from Gaffey

Street in San Pedro, passes through the Los Angeles region, and extends to Interstate 210 in Pasadena. Interstate 710 is a north-south highway that extends from the region to downtown Los Angeles. Interstate 110 and Interstate 710 connect the region to Interstate 405, which passes through the Los Angeles region and is generally parallel to the coast.

Mass transit to the region is provided by an extensive system of streets, highways and freeways; rail service, airports, ports and public transportation. The closest major airports serving the Los Angeles Basin are the Los Angeles International Airport, Burbank Airport, Long Beach Airport, John Wayne International Airport, Ontario International Airport, and numerous smaller airports. There are also several public transportation organizations including Los Angeles Department of Transportation, the Metropolitan Transit Authority, and the Municipal Area Express which provide bus services in the vicinity of the project area.

3.7.2.2. Circulation at LAAFB Housing Areas

Fort MacArthur in the San Pedro community is approximately 3 miles south of Interstate 110 where it terminates at Gaffey Street. Fort MacArthur is bound by South Pacific Avenue on the west, Stephen N. White Drive on the south, Shoshonean Road/Via Cabrillo Marina on the east, and West Old Fort Road on the north. Fort MacArthur has direct access to South Pacific Avenue, which connects to the local and area-wide surface transportation networks (LAAFB 2004).

The Pacific Heights housing area is bound by Western Avenue on the northwest, 25th Street on the northeast, public open space on the south, and by private property on the east. The Pacific Crest housing area is bound by 25th Street on the south and by private property on all other sides. Pacific Heights and Pacific Crest both have one controlled access point and ~~have~~ direct access to 25th Street and indirect access to the nearby Western Avenue (LAAFB 2004).

In San Pedro, Metro Bus #446 travels on South Pacific Avenue and serves staff and personnel at Fort MacArthur. The San Pedro Electric Trolley runs just east of Fort MacArthur and provides access to the San Pedro Historic Downtown, Ports O'Call Village, Cabrillo Marina Station, the San Pedro Hilton Hotel, Cabrillo Beach and the Marine Aquarium (LAAFB 2004).

3.8. VISUAL RESOURCES

3.8.1. Definition of Resource

Visual resources are defined as the natural and manufactured features that comprise the aesthetic qualities of an area. These features form the overall impressions an observer receives of an area or its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of a landscape.

3.8.2. Existing Conditions

3.8.2.1. Regional Visual Character

San Pedro is located on the Palos Verdes Peninsula in the Harbor Planning Area of the City of Los Angeles. The visual environment on the peninsula is typical of a coastal area with steep cliffs and rolling hills extending up from the Pacific Ocean. Along the hills are the predominantly low-rise residential neighborhoods of San Pedro. The San Pedro bluffs rise to an elevation of approximately 50 feet above sea level immediately along the coastline and continue to rise steeply to the west. Fort MacArthur occupies the majority of this bluff top. The Pacific Ocean is located to the east and the Port of Los Angeles is located to the northeast.

The San Pedro Coastal Land Use Plan designates visual corridors and scenic view sites. These areas provide visual access to coastal views and include the Korean Bell, the Osgood-Farley Battery Site, Lookout Point, and Paseo Del Mar (Figure 3-6) (Community of San Pedro 1999).

3.8.2.2. Visual Resources at LAAFB Housing Areas

Fort MacArthur occupies approximately 91 acres of land on the eastern edge of the San Pedro Coastal Area (Figure 3-6). The area is visible from the community of San Pedro, from the western edge of the Port of Los Angeles, from the Cabrillo Marine area, and from the Pacific Ocean.

Two unique visual elements are present in Fort MacArthur: the historic area and the housing area. The architectural style of the housing area, which is the southern part of Fort MacArthur, is characteristic of a military housing area where buildings tend to vary only slightly in style and construction materials. Most structures are housing units that are two-story stucco on wood frame (LAAFB 2005). Several playgrounds are located throughout the housing area. A linear park runs along Fort MacArthur's perimeter fence, which is the largest continuous park area in the family housing area, but is not yet identified as a park. The boundary fencing in the historic district is 6 to 7 feet tall aluminum picket fencing painted black, with occasional stucco columns (LAAFB 2004). Along Quartermaster Road, there are historic homes that were constructed in 1918. The majority of the historic homes overlook the parade ground. A small park and the Casa San Marcos historic marker and fountain are positioned on the eastern edge of the parade ground. Views of the Pacific Ocean and the Port of Los Angeles are available from within Fort MacArthur along the eastern edge of the neighborhood (LAAFB 2005).

The architectural style of Pacific Heights and Pacific Crest is characteristic of military housing areas. Most structures are two-story, single-family, detached units suburban in style and constructed in the 1980s. Additionally in Pacific Heights, housing units constructed in 2000 have a California bungalow architectural style. This area of Pacific Heights has a strong emphasis on pedestrian circulation and low-density development. Pacific Crest is located on an elevated coastal terrace overlooking the Pacific Ocean to the south and San Pedro to the north. Housing density is relatively high in Pacific Crest. Pacific Heights overlooks White Point Park and the Pacific Ocean to the south and provides views of the surrounding coastal areas (LAAFB 2005).

Landscaping has been implemented in portions of the housing areas. LAAFB developed a *Facilities Excellence Plan* to provide guidance in architecture, building interior standards, landscape development, hardscape standards, site furnishings, and infrastructure equipment standards.

3.9. CULTURAL RESOURCES

3.9.1. Definition of Resource

Cultural resources represent and document activities, accomplishments and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups.

Archaeological resources comprise areas in which prehistoric or historic activity measurably altered the earth or deposits of physical remains (e.g., arrowheads, bottles) are discovered therein. Architectural resources include standing buildings, districts, bridges, dams and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP), an inventory of culturally significant resources identified in the U.S. However, more recent structures such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals and minerals Native Americans or other groups consider essential for the persistence of traditional culture.

Several federal laws and regulations have been established to manage cultural resources, including the National Historic Preservation Act (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resource Protection Act (1979), the Native American Graves Protection and Repatriation Act (1990), and the DOD American Indian and Alaska Native Policy (1999). In order for a cultural resource to be considered significant, it must meet one or more of the following criteria for inclusion on the NRHP:

“The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design setting, materials, workmanship, feeling, and association and:
1) that are associated with events that have made a significant contribution to the broad patterns of our history; or 2) that are

associated with the lives or persons significant in our past; or 3) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or 4) that have yielded, or may be likely to yield, information important in prehistory or history” (CFR, Title 36, Part 60:4).

3.9.2. Existing Conditions

3.9.2.1. Regional and Local History

For 1,000 years prior to the arrival of the Europeans, much of the Los Angeles Basin was home to the Tongva people, Shoshonean-speaking hunters and gatherers who lived in villages scattered throughout the area along the rivers and marshes and near the ocean. The Tongva population numbered between 5,000 and 10,000 when the Europeans arrived.

In 1542, a Spanish explorer, Juan Rodriguez Cabrillo, discovered the “Bay of Smokes,” named for the smoke from the Tongva campfires. In 1603, another Spanish explorer, Sebastian Vizcaino, dubbed the inlet San Pedro, in honor of St. Peter, the second century bishop of Alexandria. (San Pedro was annexed to the City of Los Angeles in 1909.) The territory was claimed by Spain, but was not explored until 1769, when Gaspar de Portolà led a Spanish land party to scout sites for Franciscan missions and civilian settlements.

The Mexican War of Independence from Spain began in 1810. The Mexicans were victorious in 1821 and declared the Republic of Mexico in 1823 and California was made a territory of the Republic in 1825. In 1835, the Mexican Congress made Los Angeles a *ciudad* (city). During the 1840s, Los Angeles became a prize of war in the Mexican-American War. On August 13, 1846, Captain John Fremont entered the pueblo and declared it an American territory. The Treaty of Cahuenga ended the conflict in California in 1847, but it was the Treaty of Guadalupe Hidalgo that officially ended the war in 1848. The City of Los Angeles was incorporated in 1850 with a population of just over 1,600. Among that number were Mexicans of Indian, Spanish and African ancestry; Anglos of English, French, Irish, German, and other European descent; and Chinese.

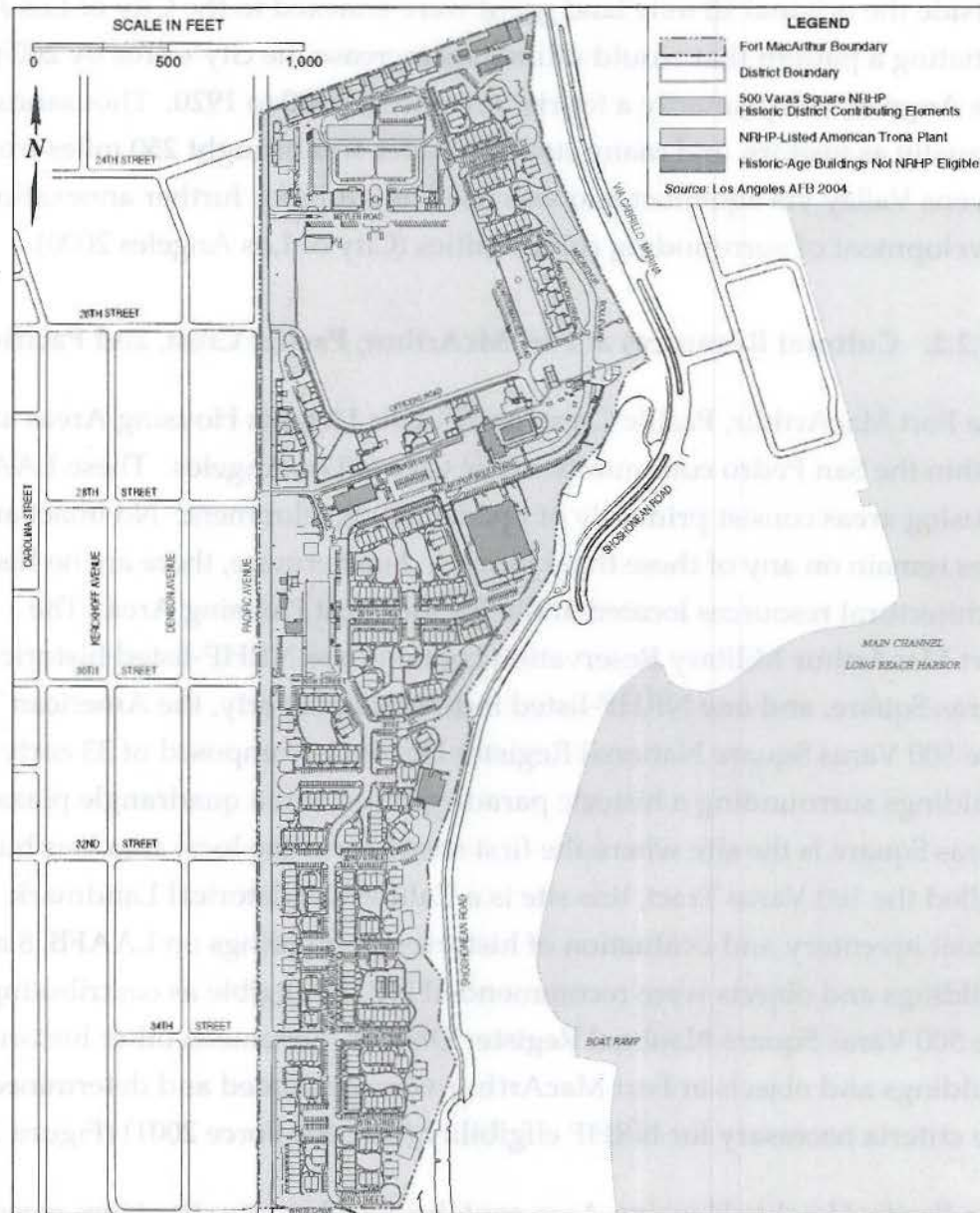
Between 1890 and 1900, major improvements were made in Los Angeles infrastructure. A public transportation system was created, water supplies were enlarged, oil was discovered, the harbor was improved, and the city acquired Griffith Park, the nation's largest urban park. A newly formed Chamber of Commerce promoted Los Angeles and Southern California and smaller communities outside the original 28 mile land grant were annexed to the City of Los Angeles, initiating a pattern that would ultimately increase the city's area by 200 percent. Los Angeles was primarily a tourist town from 1900 to 1920. Thousands came annually as visitors, and many stayed. Water was brought 250 miles from the Owens Valley via aqueduct and was used as a lure for further annexation and development of surrounding communities (City of Los Angeles 2000).

3.9.2.2. Cultural Resources at Fort MacArthur, Pacific Crest, and Pacific Heights

The Fort MacArthur, Pacific Crest, and Pacific Heights Housing Areas are located within the San Pedro community of the City of Los Angeles. These LAAFB military housing areas consist primarily of residential development. No intact archaeological sites remain on any of these three parcels. Furthermore, there are no historic-age architectural resources located at the Pacific Crest Housing Area. The Fort MacArthur Military Reservation contains one NRHP-listed historic district, 500 Varas Square, and one NRHP-listed individual property, the American Trona Plant. The 500 Varas Square National Register District is composed of 33 early 20th century buildings surrounding a historic parade ground and a quadrangle plaza. Within 500 Varas Square is the site where the first structure in the local area was built in 1823. Called the 100 Varas Tract, this site is a California Historical Landmark. During a recent inventory and evaluation of historic-age buildings on LAAFB, 8 additional buildings and objects were recommended NRHP-eligible as contributing elements to the 500 Varas Square National Register District. Seventeen other historic-age buildings and objects at Fort MacArthur were evaluated and determined to not meet the criteria necessary for NRHP eligibility (U.S. Air Force 2001) (Figure 3-7).

The Pacific Heights Housing Area contains four historic structures recently determined eligible for the NRHP as contributing elements to a potential White Point Coastal Defense Historic District, if it is created in the future (U.S. Air Force 2001). These include two 1920 Base End Stations, one World War II Alternate Battery Commander's Station, and a World War II subterranean Plotting, Survey,

and Radio Room. All five parcels of LAAFB contain buildings dating to the Cold War era (1946 to 1989). An inventory of all Cold War-era resources on LAAFB was conducted and determined that no buildings were eligible for NRHP (LAAFB 2004).



EA

Cultural Resources Areas within Fort MacArthur

FIGURE
3-7

3.10. SOCIOECONOMICS

3.10.1. Definition of Resource

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Human population is affected by regional birth and death rates as well as net migration. Economic activity typically comprises employment, personal income, and industrial growth. Impacts on these two fundamental socioeconomic indicators can also influence other components such as housing availability and public services provision.

Socioeconomic data in this section are presented at the county, state and national level to analyze baseline socioeconomic conditions in the context of regional, state, and national trends. Data has been collected from previously published documents issued by Federal, state and local agencies and from state and national databases (e.g., U.S. Bureau of Economic Analysis [BEA] *Regional Economic Information System*).

3.10.2. Existing Conditions

3.10.2.1. Population

From 1980 to 2000, the population of Los Angeles County increased by 27.3 percent, from 7,477,503 to 9,519,338 people. During the same time period, the State of California population increased by 43.1 percent, and the national population increased by 24 percent (U.S. Census Bureau 2000) (Table 3-3).

Table 3-3. Population Overview: 1980-2000

	1980	1990	2000
Los Angeles County	7,477,503	8,863,164	9,519,338
California	23,667,902	29,760,021	33,871,648
United States	226,545,805	248,709,873	281,421,906

Source: U.S. Census Bureau 2000.

According to the Southern California Association of Governments, Los Angeles County is expected to reach a population of 11,513,400 by 2014; a project growth rate of 17.3 percent from the county's population in 2000. Between 2000 and 2020, the population of California is expected to grow by approximately 14,808,543 (43.4 percent) (State of California 2004).

3.10.2.2. Job Growth and Unemployment

Employment

Employment sectors providing the greatest number of jobs in Los Angeles County are *services, government and government enterprises, and manufacturing* (Table 3-4). Combined, these sectors provide jobs for 64.6 percent of the county's workforce, which totaled about 5,478,609 people in 2003. Of these employment sectors, a net increase of 106 percent was experienced in *services* (increased by 1,225,238 jobs) between 1980 and 2003. The *government and government enterprises* sector experienced an increase of 23.4 percent (increased by 118,466 jobs) since 1980. Farm employment also increased in the same time period from 8,404 to 8,520; an increase of 1.3 percent (U.S. BEA 2005).

Overall county employment levels increased between 1990 and 2000, experiencing a cumulative increase of 145,310 (2.7 percent overall increase). Total job growth in the county was less than California's growth of 15.6 percent and U.S. growth of 20 percent during the same time period. Further, based on the North American Industry Classification System (NAICS), which replaced the U.S. Standard Industrial Classification (SIC) system, data shows employment in Los Angeles County decreased between 2000 and 2003 by 0.3 percent (U.S. BEA 2005).

Among the largest employers in the Los Angeles metropolitan area are American Honda Motor Company, Amtrak, Boeing, Fox Films, Kaiser Permanente, and California State University (infoUSA 2005).

Table 3-4. Los Angeles County Employment by Industry (1980, 1990, and 2003)

Employment Sector	1980	1990	2003	Total Change 1980-2003
Farm	8,404	11,088	8,520	1.38%
Non-Farm	4,333,657	5,342,830	5,470,089	26.2%
Agricultural Services, Forestry, Fishing & Mining	46,050	43,480	12,126	-74.0%
Construction	153,345	208,982	205,582	34.1%
Manufacturing	939,169	885,553	535,271	-43.0%
Transportation & Public Utilities	214,338	248,530	207,106	-4.4%
Wholesale Trade	287,021	339,702	255,982	-10.9%
Retail Trade	648,297	784,380	524,065	-19.2%
Finance, Insurance, Real Estate	383,456	477,914	490,578	27.9%
Services	1,156,050	1,780,566	2,381,288	105.9%
Govt. and Govt. Enterprises	505,931	573,723	624,397	23.4%

Note: The general employment sector of *services* is now divided into specific service sectors in the U.S. BEA database. However, for comparative purposes *services* is shown in Table 3-4 as one employment sector.

Unemployment

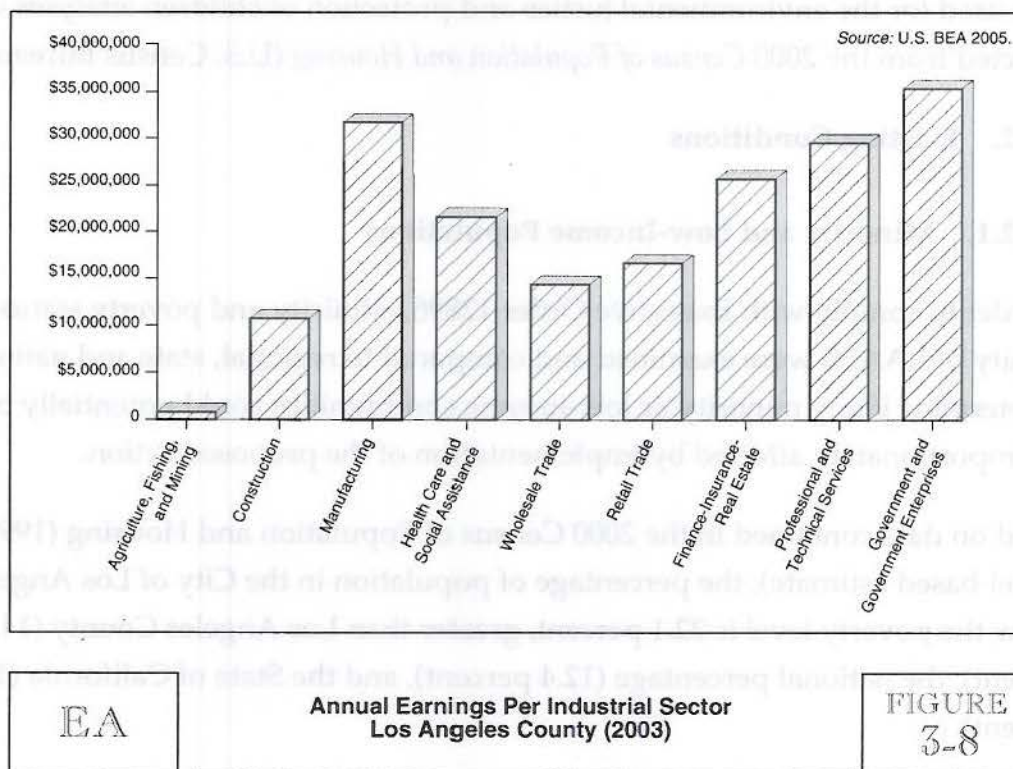
In 2000, the unemployment rate for Los Angeles County was 5.0 percent, greater than the unemployment rate for California (4.3 percent) and the nation (3.7 percent) (U.S. Census Bureau 2000).

Job Composition

Employment in the *government* sector comprises *state and local government*, *federal military* and *federal civilian* jobs. *Government* employment increased by 6 percent (34,530 jobs) between 1990 and 2000 and by another 2.6 percent as of 2003. Of the approximately 608,253 wage and salary *government* jobs in the county in 2003, approximately 530,274 (87.1 percent) comprised *state and local government* personnel, 20,511 (3.4 percent) comprised *federal military* personnel, and 57,468 (9.4 percent) comprised *federal civilian* employees (U.S. BEA 2005).

Earnings

Figure 3-8 presents annual earnings per industrial sector in Los Angeles County in 2003 when the county had total earnings of approximately \$311.28 billion. Greatest earning was reported in *manufacturing* (\$31.68 billion), *information* (\$23.92 billion), and *government and government enterprises* (\$35.37 billion). Included within the *government* sector are *state and local*, *federal military*, and *federal civilian* categories which reported earnings of \$30.20 billion, \$8.57 million, and \$4.31 billion, respectively (U.S. BEA 2005). Per capita personal income in Los Angeles County for 2003 was \$31,569; less than the California average (\$32,845) but greater than the national average (\$30,906).



3.11 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

3.11.1. Approach to Analysis

In 1994, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, was issued to focus attention of federal agencies on human health and environmental conditions in minority and low-income communities and to ensure disproportionately high and adverse human health or environmental effects on these communities are identified and addressed.

Because children may suffer disproportionately from environmental health risks and safety risks, Executive Order 13045, *Protection of Children from Environmental Health and Safety Risks*, was introduced in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure federal agencies' policies, programs, activities, and standards address environmental health risks and safety risks to children.

Data used for the environmental justice and protection of children analyses were collected from the 2000 *Census of Population and Housing* (U.S. Census Bureau 2000).

3.11.2. Existing Conditions

3.11.2.1. Minority and Low-Income Populations

In order to comply with Executive Order 12898, ethnicity and poverty status in the vicinity of LAAFB were examined and compared to regional, state and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the proposed action.

Based on data contained in the 2000 Census of Population and Housing (1999 model-based estimate), the percentage of population in the City of Los Angeles below the poverty level is 22.1 percent, greater than Los Angeles County (14.4 percent), the national percentage (12.4 percent), and the State of California (12.7 percent).

The percentage of minority residents in the City of Los Angeles (53.1 percent) is the greatest among the four geographic areas examined for this analysis. By comparison, minority residents comprise lower percentages in the County of Los Angeles (51.3 percent), California (40.5 percent), and the nation (24.9 percent) (U.S. Census Bureau 2000).

3.11.2.2. Protection of Children

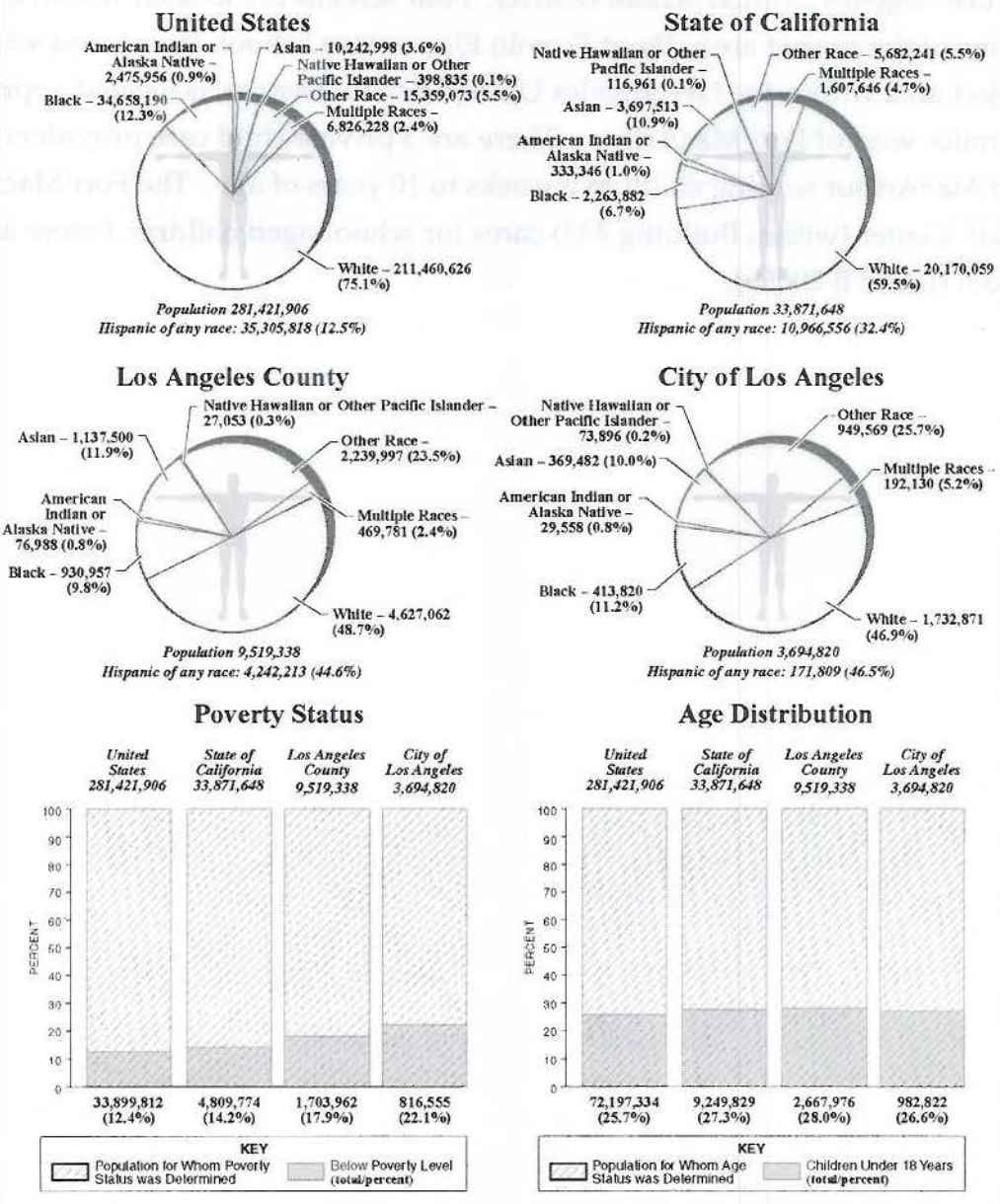
In order to comply with Executive Order 13045, the number of children under age 18 in the vicinity of the project area (Fort MacArthur, Pacific Crest, and Pacific Heights) was examined and compared to city, county, state and national levels. Additionally, locations in which populations of children may be concentrated (e.g., child care centers, schools, and parks) were determined to address potentially disproportionate health and safety risks to children that may result from implementation of the proposed action.

In 2000, there were 982,822 children under the age of 18 in the City of Los Angeles, comprising 26.6 percent of the overall population. This compares to 28.0 percent for Los Angeles County, 27.3 percent for the State of California, and 25.7 percent for the nation (U.S. Census Bureau 2000) (Figure 3-9).

Los Angeles County has 96 school districts and 1,823 public schools. Children living in the vicinity of Fort MacArthur, Pacific Crest, and Pacific Heights attend schools in the Los Angeles Unified School District. Four schools are located within a 2-mile radius of the project area. Point Fermin Elementary School, the nearest school to the project area within the Los Angeles Unified School District, is located approximately 0.6 miles west of Fort MacArthur. There are 3 private child care providers in Fort MacArthur serving children 2 weeks to 10 years of age. The Fort MacArthur Youth Center (within Building 425) cares for school-aged children before and after school (LAAFB 2005b).



Source: U.S. Bureau of the Census 2000.



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Environmental Justice Data

FIGURE
3-9

3.12. HAZARDOUS MATERIALS AND WASTES

3.12.1. Definition of Resource

Hazardous materials are defined as substances with strong physical properties of ignitability, corrosivity, reactivity or toxicity which may cause an increase in mortality, a serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. *Hazardous wastes* are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or the environment.

Issues associated with hazardous materials and wastes typically center on underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, and use of pesticides, bulk fuel, and petroleum, oil and lubricants (POL). When such resources are improperly used they can threaten the health and well being of wildlife species, botanical habitats, soil systems, water resources, and people.

To protect habitats and people from inadvertent and potentially harmful releases of hazardous substances, DOD dictated all facilities develop and implement *Hazardous Waste Management Plans* or *Spill Prevention, Control, and Countermeasure Plans*, as well as *Facility Response Plans*, if applicable, under the Oil Pollution Act of 1990. In addition, DOD developed the Environmental Restoration Program (ERP) (formerly Installation Restoration Program [IRP]), intended to facilitate thorough investigation and cleanup of contaminated sites located at military installations. These plans and programs, in addition to established legislation (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] and Resource Conservation and Recovery Act [RCRA]) effectively form the “safety net” intended to protect the ecosystems on which most living organisms depend.

3.12.2. Existing Conditions

3.12.2.1. Hazardous Waste Generation and Storage

Hazardous waste generated on Fort MacArthur is primarily paints, used oils and other materials used for building repair and maintenance. Waste is stored in the Civil Engineering Compound, near Building 78.

3.12.2.2. Fuel Storage

Diesel fuel is stored on the base in above ground storage tanks. There are no active underground storage tanks present at LAAFB (LAAFB 2004).

3.12.2.3. Environmental Restoration Program

The ERP was developed by the DOD to identify and address environmental contamination from past military operations. Future development of sites identified through the ERP may be constrained depending on the severity of the contamination and the extent of the remedial action required. The overall objective of the ERP is to identify potential environmental problems and provide timely remedies, so as to protect public health and the environment. There are 3 ERP sites within the 3 housing areas associated with LAAFB; 2 sites at Fort MacArthur and 1 at Pacific Heights, all of which are closed.

Fort MacArthur

ERP Site ST02: UST Site. This site is located between the eastern property line and MacArthur Road. Two 10,000-gallon steel USTs were installed for storing fuel when the Fort was an Army facility during World War II. When in use, the tanks supplied fuel to a vehicle maintenance shop. After World War II, the tanks and fueling system were abandoned and not rediscovered by Air Force personnel until 1985. A first attempt to remove the USTs was unsuccessful and soil contamination was discovered. Phase I and II investigations were conducted between 1985 and 1989 during which soil and groundwater samples were taken. The tanks were removed successfully in 1994. The Los Angeles Regional Water Quality Control Board (LARWQCB) declared the site closed in April 1997 and issued a No Further Response Action Planned document in March 1998 (LAAFB 1997).

ERP Site WP14: Pesticide Wastewater Soakage Pit. This site is located adjacent to the east of Building 113 at Fort MacArthur. Pesticides are used at the housing area to maintain grounds and structures and to prevent pest-related problems. Contractors have been responsible for pest control since the Air Force acquired Fort MacArthur in 1982. Prior to that time, the U.S. Army was responsible for pest control and pesticides were stored and mixed in Building 113. Pesticide-contaminated rinse water from equipment and container rinsing was reportedly

discharged to the sanitary sewer system or to a gravel soakage pit near Building 113 through the early 1970s. According to available records, no bulk quantities of pesticides were disposed of on Fort MacArthur. Soil borings were drilled and soil samples were collected to determine the presence of contamination. Results showed the pesticides were only detected up to 1 foot beneath the soil surface and all pesticide concentrations were analyzed below their respective standards. The Los Angeles Regional Water Quality Control Board declared the site closed and issued a No Further Response Action Planned document in June 1998 (LAAFB 1998).

Pacific Heights

ERP Site LF04: Pacific Heights Disposal Area. White Point was acquired by the U.S. Army in 1944, and two 16-inch coastal artillery gun emplacements were located on the north central portion of the property. A drainage swale was established to divert surface water flow away from the emplacement. Support facilities, including a motor pool area, were built on the flat area above the drainage swale near the intersection of 25th Street and Western Avenue. After the Air Force acquired the property for the Pacific Heights military housing area, initial land preparation activities revealed 55-gallon drums and other debris. Further investigations were conducted throughout 1987 and 1988. The drums, soil and drainage swale were removed and disposed of in accordance with federal, state and local regulations. The site was closed and the California Department of Toxic Substances Control issued a No Further Response Action Planned document in October 1997 (LAAFB 1997b).

3.12.2.4. Asbestos and Lead-Based Paint

Some older piping at Fort MacArthur has the potential to contain asbestos. This piping may take the form of transite pipe or possibly asbestos-cement pipe (Wilson 2004). Asbestos was not used in piping within the Pacific Crest MFH or the Pacific Heights MFH areas.

No comprehensive survey to assess the presence of lead-based paint has been performed at the housing areas associated with LAAFB. Lead-based paint may be present on fire hydrants located within Fort MacArthur (Wilson 2004). The utility systems located within Pacific Crest MFH and Pacific Heights MFH were upgraded or constructed after 1978 and are not likely to contain lead-based paint.

3.13. SAFETY

3.13.1. Definition of Resource

The primary safety issue affecting military housing is Anti-Terrorism/Force Protection requirements (ATFP). Requirements include setbacks of parking areas from buildings, increased security measures at military facility entrances and exits (including barricades), and ATFP-compliant perimeter fences. The *United States Air Force Installation Force Protection Guide* contains information on installation planning, engineering design, and construction techniques that can preclude or minimize the effects of terrorist attacks upon existing and future facilities. It addresses the comprehensive planning process, facility site design, and building systems design. Other detailed technical sources including Federal guidance, DOD guidance, and Air Force guidance are provided in the bibliography. Additional criteria are available in *Unified Facilities Criteria* (UFC) 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings*.

3.13.2. ATFP Standards at Fort MacArthur, Pacific Crest, and Pacific Heights

Currently no ATFP measures have been implemented at any of the MFH areas. LAAFB is in the process of installing ATFP-standard perimeter fences at Fort MacArthur and increasing security procedures at all facility entrances.

4.0 ENVIRONMENTAL CONSEQUENCES

Environmental impacts that would result from installation of the proposed PV powered LED perimeter lighting system at Fort MacArthur, Pacific Crest, Pacific Heights I & II are evaluated in this section. Analyses are organized by resource area, as presented in Section 3.0, *Affected Environment*.

4.1. AIR QUALITY

4.1.1. Approach to Analysis

The 1990 Amendments to the Clean Air Act (CAA) require federal agency activities conform to the State Implementation Plan (SIP) with respect to achieving and maintaining attainment of National Ambient Air Quality Standards (NAAQS) and addressing air quality impacts. The U.S. Environmental Protection Agency's (USEPA) *General Conformity Rule* requires a conformity analysis be performed which demonstrates a proposed action does not: 1) cause or contribute to any violation of any NAAQS in the area; 2) interfere with provisions in the SIP for maintenance or attainment of any NAAQS; 3) increase the frequency or severity of any existing violation of any NAAQS; or 4) delay timely attainment of any NAAQS, any interim emission reduction goals, or other milestones included in the SIP. Provisions in the *General Conformity Rule* allow for exemptions from performing a conformity determination only if total emissions of individual nonattainment area pollutants resulting from the proposed action fall below the significant (*de minimis*) threshold values.

4.1.2. Impacts

4.1.2.1. Proposed Action

Emissions from the installation of a PV powered LED lighting system would include fugitive dust emissions from site preparation activities and combustion emissions from vehicles and heavy-duty equipment during installation. However, increased emissions resulting from construction activities would be short-term and negligible. Once operational, no emissions or impacts to air quality would occur. As shown in Table 4-1, emissions generated from this action fall below *de minimis* threshold values. Thus, this action is exempt from a general conformity determination.

Table 4-1. General Conformity De Minimis Thresholds

5. Pollutant	De Minimis Thresholds (tons/year)	Emissions Generated by Action (tons/year)
Volatile Organic Compounds	10	0.11
Nitrogen Oxides	10	0.70
PM ₁₀	70	0.04
PM _{2.5}	100	0.04
Carbon Monoxide	100	0.66

4.1.2.2. Alternative 1 – Use of Conventionally Powered Perimeter Lighting System

Under this alternative, a conventional electrical lighting system would be installed. This would increase the electrical demand from the MFH areas. Additionally, this alternative would require installation of transformers, additional conduits resulting in increased excavation and air emissions. Therefore, impacts to air quality would be greater than for the proposed action.

4.1.2.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, LAAFB would not install the proposed perimeter lighting system. No impacts to existing air quality conditions, as described in Section 3.1, would result from the selection of the No-Action Alternative.

4.2. NOISE

4.2.1. Approach to Analysis

Noise impact analyses address potential changes to existing noise environments that would result from implementation of a proposed action. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the total area

exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure to unacceptable noise levels).

4.2.2. Impacts

4.2.2.1. Proposed Action

Common noise impacts include hearing loss, annoyance and speech interference. Federal workplace standards for protection from hearing loss allow a time-average level of 90 dB over an 8-hour period, or 85 dB averaged over a 16-hour period. Noise annoyance is defined by the USEPA as any negative subjective reaction on the part of an individual or group (USEPA 1973). For community noise annoyance thresholds, a day-night average of 65 dB has been established by the U.S. Department of Housing and Urban Development as eligibility for federally guaranteed home loans. Regarding speech interference, research shows “whenever intrusive noise exceeds approximately 60 dB indoors, there will be interference with speech communication” (Federal Interagency Committee on Noise [FICON] 1992). Potential impacts of noise on wildlife are discussed further in Section 4.6, *Biological Resources*; potential impacts of noise on children are discussed further in Section 4.11, *Environmental Justice: Protection of Children*.

The proposed action will result in no significant increase in daily and single event noise levels. During site work and minor construction, the proposed work would raise noise levels to the 90- decibel range for short durations.

4.2.2.2. Alternative 1 – Use of Conventionally Powered Perimeter Lighting

Under this alternative the action will result in no significant increase in daily and single event noise levels. However additional site work and minor construction associated with a more complex lighting system will increase the duration of construction and installation related noise. The noise generated during construction would be comparable to that generated if the proposed alternative were implemented.

4.2.2.3. Alternative -2 No Action

If the No-Action Alternative were selected, LAAFB would not implement the proposed action. No impacts to existing noise conditions, as described in Section 3.2, would result from the selection of the No-Action Alternative.

4.3 LAND USE

4.3.1. Approach to Analysis

Significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action. In general, land use impacts would be significant if they would: 1) be inconsistent or noncompliant with applicable land use plans or policies; 2) preclude the viability of existing land use; 3) preclude continued use or occupation of an area; or 4) be incompatible with adjacent or vicinity land use to the extent that public health or safety is threatened.

4.3.3.1. Proposed Action

The proposed activity is designed to protect LAAFB personnel and by providing enhanced safety and security. The proposed project is inherently consistent with LAAFB planning policies and guidelines. Therefore, impacts of project implementation to on-site land use would be beneficial.

Off-site land use would not be impacted. No new land use activities would be introduced onto Fort MacArthur, Pacific Crest, or Pacific Heights I and II. All construction activities would take place within existing housing area boundaries. Therefore, no newly introduced activity would have the potential to conflict with vicinity land use. No impact to land use activities, patterns, or policies in areas surrounding Fort MacArthur, Pacific Crest, or Pacific Heights I & II would occur.

4.3.3.2. Alternative 1 – Use of Conventionally Powered Perimeter Lighting

Under implementation of this alternative, the Perimeter lighting system would be installed and tied into the existing power grid. No other changes to the proposed action would occur. All impacts would be the same as those described for the proposed action.

4.3.3.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, LAAFB would not install the perimeter lighting system. If the No-Action Alternative were implemented, current security requirements would remain. Therefore, because the current situation is considered adverse with respect to security and safety, selection of the No-Action Alternative would result in continued adverse land use conditions.

4.4. GEOLOGICAL RESOURCES

4.4.1. Approach to Analysis

Generally, impacts with regard to geological resources can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development. Analysis of potential impacts to geological resources typically includes: 1) identification and description of resources that could potentially be affected; 2) examination of the proposed action and potential effects this action may have on the resource; 3) assessment of the significance of potential impacts; and 4) provision of mitigation measures in the event potentially significant impacts are identified.

4.4.2. Impacts

4.4.2.1. Proposed Action

Geology

Potential geologic impacts associated with the proposed action at Fort MacArthur, Pacific Crest and Pacific Heights I & II would be limited to ground-disturbing activities (i.e., during site preparation and installation). Minor impacts would result from proposed construction activities; however, installation of PV units would occur on previously disturbed land capable of supporting the units. Proposed construction activities would be localized and not have significant impacts on sensitive geologic or physiographic features.

Soils

Installation of all PV panels would occur on soils previously disturbed. Implementation of best-management practices (e.g., watering to control wind

erosion) would limit any impacts to naturally occurring soils that might result from installation of the PV units. For example, soil stockpiling would minimize any resultant erosive losses. Therefore, project implementation would not result in significant impacts to soils.

Topography

Installation of all the proposed PV System within Fort MacArthur, Pacific Crest and Pacific Heights would occur on previously disturbed land capable of supporting such development. Best-management practices would be incorporated to minimize potential impacts associated with erosion and altering the topography at these locations. Therefore, impacts to local topography due to the proposed action would not be significant.

4.4.2.2. Alternative 1 – Use of Conventional Lighting

Under this alternative, the proposed action would be implemented with the exception the lighting would be powered off the existing grid. All impacts would be the same as those described for the proposed action. Therefore, impacts to geological resources due to implementation of alternative 1 would not be significant.

4.4.2.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, LAAFB would not implement the proposed action and no impacts to geological resources would occur.

4.5. WATER RESOURCES

4.5.1. Approach to Analysis

Determination of the significance of potential impacts to water resources is based on water availability, quality and use; existence of floodplains and wetlands; and associated regulations. An impact to water resources would be significant if it would 1) reduce water availability to or interfere with the supply of existing users; 2) create or contribute to overdraft of groundwater basins or exceed safe annual yield of water supply sources; or 3) adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions.

4.5.2. Impacts

4.5.2.1. Proposed Action

Surface Water

No surface water is present on Fort MacArthur, Pacific Crest, or Pacific Heights. Stormwater runoff is collected through a series of underground storm drains managed by the City of Los Angeles. Installation of the PV lighting system could have localized (i.e., site-specific) temporary effects on surface water runoff. However, best-management practices (e.g., silt fencing) would be incorporated during installation if necessary to minimize erosion, runoff and sedimentation. Therefore, impacts would not be significant with regard to surface water.

Groundwater

Installation of the PV poles would include the installation of small concrete footings on which the proposed PV Units and electronics would be mounted. No other additional impermeable surface would be established as a part of the proposed action, therefore only negligible impacts to regional groundwater recharge capabilities would occur and the proposed action would not have an adverse impact on groundwater resources.

Floodplains

No floodplains occur within the vicinity of the three housing areas. Therefore, no impacts to floodplains would occur as a result of the proposed action.

4.5.2.2. Alternative 1 – Use of Conventionally Powered Lighting

Under this alternative, the perimeter lighting system would be powered by a utility grid. With regards to water resources, impacts would be the same as described for the proposed action (i.e., not significant).

4.5.2.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, proposed installation of the perimeter lighting system would not be implemented and water resources conditions would

remain unchanged from their current status, as described in Section 3.5. Selection of the No-Action Alternative would not impact regional or local water resources.

4.6. BIOLOGICAL RESOURCES

4.6.1. Approach to Analysis

Determination of the significance of potential impacts to biological resources is based on 1) the importance (i.e., legal, commercial, recreation, ecological, or scientific) of the resource; 2) the proportion of the resource that would be affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and 4) the duration of ecological ramifications. Impacts to biological resources are significant if species or habitats of concern are adversely affected over relatively large areas or if disturbances cause reductions in population size or distribution.

Potential physical impacts such as habitat loss, noise and impacts to surface water were evaluated to assess potential impacts to biological resources resulting from installation of the proposed mass notification system.

4.6.2. Impacts

4.6.2.1. Proposed Action

Vegetation

Installation of the PV lighting system associated with the proposed action would require some vegetation removal in grassy areas at Fort MacArthur, Pacific Crest, and Pacific Heights. However, due to the lack of sensitive plant species at the housing areas, proposed installations would not have significant impacts on vegetation or the habitat it would provide.

Wildlife

Implementation of the proposed action may cause minimal disturbance due to noise during construction. Impacts to wildlife from implementation of the proposed action would be short-term and not significant.

Threatened and Endangered Species

Feeding habitat for the California Least Tern exists adjacent to the project area at the San Pedro wetland; however, the nearest known nesting area is located at Terminal Island at the Long Beach Harbor. Noise levels during construction are estimated to average 90 dB. However, construction would be conducted for a short period of time and no nesting colonies are present at the wetland. Therefore, impacts associated with the proposed action would not be significant to threatened or endangered species.

Wetlands

One wetland is present along the eastern portion of Fort MacArthur, north of 32nd Street. No wetlands are present on Pacific Crest or Pacific Heights I & II. Two other wetlands are located off site but near the three housing areas. Installation of the proposed PV lighting system is not proposed on or immediately adjacent to any of the wetlands and would therefore not impact any wetland areas.

4.6.2.2. Alternative 1 – Use of Conventionally Powered Perimeter Lighting

Implementation of alternative 1 would involve the installation of additional equipment necessary to tie into the existing power grid. As a result, construction related noise impacts to wildlife and endangered species in the vicinity of the three housing areas would be slightly higher than for the proposed action. However, these short term impacts will result in no significant impact to biological resources.

4.6.2.3. Alternative 2 – No-Action Alternative

Under the No-Action Alternative, the proposed action would not occur and existing conditions as described in Section 3.6 would remain unchanged.

4.7. TRANSPORTATION AND CIRCULATION

4.7.1. Approach to Analysis

Potential impacts to transportation and circulation are assessed with respect to anticipated disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing levels of service; and changes in

existing levels of transportation safety. Beneficial or adverse impacts may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by installation workforce and population changes. Adverse impacts on roadway capacities would be significant if roads with no history of exceeding capacity were forced to operate at or above their full design capacity.

4.7.2. Impacts

4.7.2.1. Proposed Action

Implementation of the proposed action would require delivery of materials to the MFH areas. However, construction traffic would make up only a small portion of the total existing traffic volume in the region and at the three housing areas and many of the vehicles would be driven to and kept on site for the duration of the installation period, resulting in very few actual increased trips. Further, increases in traffic volumes associated with installation of the PV lighting system would be short-term; upon completion of installation, no long-term impacts to on- or off-site transportation systems would result.

4.7.2.2. Alternative 1 – Use of Conventional Powered Perimeter Lighting

Under this alternative, the proposed action would be implemented with the exception that PV panels would not be necessary. Impacts with regard to traffic and circulation would be the same as for the proposed action—short-term and not significant.

4.7.2.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, LAAFB would not install the proposed perimeter lighting system. Therefore, no impacts to transportation or circulation would occur.

4.8. VISUAL RESOURCES

4.8.1. Approach to Analysis

Determination of the significance of impacts to visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of the resource. In general, an impact to a visual resource is significant if implementation of the proposed action would result in substantial alterations to an existing sensitive visual setting.

4.8.2. Impacts

4.8.2.1. Proposed Action

Installation of the PV powered perimeter lighting system at the MFH areas would occur in a manner that would reduce the visual impact of the PV panels and associated lighting components by positioning PV poles adjacent to existing structures and equipment; therefore, the PV lighting equipment would not obstruct views of the historic district on-site. Further, mitigation such as keeping pole length below 24 foot height as well as painting the PV poles to be consistent with *Facilities Excellence Plan* guidelines for exterior displays (i.e., using a bronze anodized finish to match flag pole displays or a black luminaire finish to match walkway-pathway lighting fixtures) would ensure the units are visually consistent with existing structures and more aesthetically appealing than if left unpainted.

The PV poles and panels would be visible from off-site at all four housing areas. The PV poles and panels at Fort Mac, Pacific Crest and Pacific Heights I & II would also partially obstruct views of the Pacific Ocean from off-site residential areas. However, none of the PV panels would be visible from any of the designated scenic view sites or visual corridors as specified by the California Coastal Commission or the San Pedro Coastal Land Use Plan. Therefore, although regional viewsheds would be altered, impacts to visual resources would be less than significant.

4.8.2.2. Alternative 1 – Install Conventionally Powered Perimeter Lighting System

Under implementation of this alternative, no PV panels or poles would be necessary, due to the incorporation of conventional lighting. The absence of PV panels and corresponding poles will minimize the visual impact to the MFH areas. However, additional equipment and excavation would be needed to facilitate the connection to the power grid.

4.8.2.3. Alternative 2 – No action

No impacts to existing visual resources at or in the vicinity of Fort MacArthur, Pacific Crest, or Pacific Heights I & II would occur if the No-Action Alternative were selected and visual resources conditions would remain as described in Section 3.8.

4.9. CULTURAL RESOURCES

4.9.1. Approach to Analysis

Cultural resources are subject to review under both federal and state laws and regulations. Section 106 of the National Historic Preservation Act of 1966 empowers the Advisory Council on Historic Preservation to comment on federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the National Register of Historic Places (NRHP).

Once cultural resources are identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the National Historic Preservation Act.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by 1) physically altering, damaging or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible or atmospheric elements out of character with the property or alter its setting; or 4) neglecting the resource to the extent it is deteriorated or destroyed.

Identifying the locations of proposed actions and determining exact locations of cultural resources that could be affected can assess direct impacts. Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and the subsequent use of the facilities can disturb or destroy cultural resources.

4.9.2. Impacts

4.9.2.1. Proposed Action

Implementation of the proposed action would occur at Fort MacArthur where cultural resources listed on the NRNP are present (i.e., the Varas Square district and the American Trono Plant property); however, installation of the PV lighting system would not occur in the vicinity of these areas. Therefore, implementation of the proposed action would not have a significant impact on architectural resources at Fort MacArthur.

Proposed locations of PV lighting system have been sited in previously disturbed areas at the three housing areas. Although these sites were disturbed during establishment and subsequent development of the housing areas, the potential exists – however slight – for currently buried remains to be uncovered during ground-disturbing activities (i.e., digging of pits for poles, and trenching for utilities). If such resources were uncovered during development at any of the proposed PV lighting sites, activities would be suspended until a qualified archaeologist could determine the significance of the resource(s).

4.9.2.2. Alternative 1 – Use of Conventional Powered Perimeter Lighting

Under implementation of this alternative, no PV poles would be installed; however additional infrastructure and underground power lines would need to be incorporated to power the conventional lighting system. Therefore, a greater potential exists to uncover archaeological resources during ground-disturbing activities. If such resources were uncovered during development at any of the proposed sites, activities would be suspended until a qualified archaeologist could determine the significance of the resource(s). Therefore, impacts under this alternative would not be significant.

4.9.2.3. Alternative 4 – No-Action Alternative

Cultural resources, as described in Section 3.9, would not be impacted if the No-Action Alternative were selected. Therefore, no significant impacts to cultural resources would occur under implementation of the No-Action Alternative.

4.10. SOCIOECONOMICS

4.10.1. Approach to Analysis

Significance of population and expenditure impacts are assessed in terms of their direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts varies depending on the location of a proposed action; for example, an action that creates 20 employment positions may be unnoticed in an urban area, but may have significant impacts in a more rural region. If potential socioeconomic impacts would result in substantial shifts in population trends, or adversely affect regional spending and earning patterns, they would be significant.

4.10.2. Impacts

4.10.2.1. Proposed Action

Economic activity associated with proposed installation of a PV lighting system, such as hiring of temporary laborers and the purchasing of materials, would be negligible on a regional scale. No long-term changes in economic activity associated with LAAFB would occur upon implementation of the proposed action (e.g., there would be no changes in base staffing levels). Therefore, implementation of the proposed action would not result in a significant impact to regional or local socioeconomic characteristics.

4.10.2.2. Alternative 1 – Use of Conventional Powered Perimeter Lighting

Implementation of this alternative would result in the same impacts to socioeconomics described above for the proposed action. Therefore, no significant impacts to socioeconomics would result from implementation of alternative 1.

4.10.2.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, LAAFB would not implement the proposed action. No change to regional socioeconomic characteristics would occur and conditions would remain as described in Section 3.10; therefore, no significant impacts to socioeconomics would occur.

4.11. ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

4.11.1. Approach to Analysis

In order to comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, ethnicity and poverty status in the vicinity of the three housing areas have been examined and compared to city, county, state and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the proposed action or alternatives. Similarly, to comply with Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, the distribution of children and locations where numbers of children may be proportionally high on and in the vicinity of Fort MacArthur, Pacific Crest and Pacific Heights I II was determined to ensure environmental health and safety risks to children are addressed.

4.11.2. Impacts

4.11.2.1. Proposed Action

Minority and Low-Income Populations

In general, residents in the communities near the three housing areas are considered low-income. The percentage of populations living below the poverty level in the City of Los Angeles is 22.1 percent. This is greater than the percentage of people

living in poverty in the State of California and the nation. The percentage of minority residents living in the City of Los Angeles (53.1) is also the greatest among the four geographic regions examined for this analysis. Residents within the city, particularly in the community of San Pedro, would not be noticeably impacted by the proposed action during construction or operation of the PV lighting system; no populations (minority, low-income or otherwise) would be disproportionately adversely impacted when compared to other populations in the community. Therefore, no significant impact with regard to environmental justice would result.

Protection of Children

There are 17 licensed daycare facilities at Fort MacArthur and one elementary school located approximately 0.6 miles west of Fort MacArthur off-site. However, the average noise level during construction would be minor and short in duration. Therefore, there would be no significant impact with regard to environmental health risks and the safety of children.

4.11.2.2. Alternative 1 – Use of Conventional Powered Perimeter Lighting

Under implementation of this alternative, no PV panel would be necessary. The need to tie into the power grid will result in changes in the duration and types of construction activities, however the total impact will be similar. Implementation of this alternative would therefore result in no significant impacts to environmental justice.

4.11.2.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, LAAFB would not install the perimeter lighting system; therefore, environmental justice and protection of children conditions would remain as described in Section 3.11. Since the current situation is considered adverse in regards to safety and security, selection of the No-Action Alternative would result in adverse impacts in regards to protection of MFH children.

4.12. HAZARDOUS MATERIALS AND WASTES

4.12.1. Approach to Analysis

Numerous local, state and federal laws regulate the storage, handling, disposal and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The significance of potential impacts associated with hazardous substances is based on their toxicity, ignitability and corrosivity. Impacts associated with hazardous materials and wastes would be significant if the storage, use, transportation or disposal of hazardous substances substantially increased the human health risk or environmental exposure.

4.12.2. Impacts

4.12.2.1. Proposed Action

During implementation of the proposed action, a temporary increase in the storage of hazardous materials and waste throughout installation of the PV lighting system would occur. However, the increase in construction-related hazardous materials and wastes would be temporary and would not comprise a significant impact. Operation of the PV lighting system would not involve use or production of any hazardous materials or wastes; therefore, no impacts with regard to hazardous materials and wastes would occur.

4.12.2.2. Alternative 1 – Use of Conventional Powered Perimeter Lighting

Implementation of this alternative would result in the installation of conventional lighting, eliminating the need for PV panel by depending on the local power grid. This dependence will increase the supporting infrastructure needed to develop functioning perimeter lightning system. All other aspects of the proposed project would remain the same. With regard to hazardous materials and wastes, impacts under this alternative would be the same as described for the proposed action (i.e., no impacts).

4.12.2.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, LAAFB would not implement the proposed action. Therefore, no impacts regarding hazardous materials and wastes would occur and conditions would remain the same as described in Section 3.12.

4.13. SAFETY

4.13.1. Approach to Analysis

If implementation of the proposed action would result in incompatible land use with regard to safety criteria such as ATEP requirements, impacts would be significant.

4.13.2. Impacts

4.13.2.1. Proposed Action

Installation of the PV perimeter lighting system would improve safety conditions at the three housing areas and promote a more efficient response time in the event of an emergency. Therefore, implementation of the proposed action would result in beneficial impacts in regards to safety.

4.13.2.2. Alternative 1 – Use of Conventional Powered Perimeter Lighting

Implementation of alternative 1 would also enhance safety conditions, therefore impacts would be the same as described for the proposed action (i.e., beneficial).

4.13.2.3. Alternative 2 – No-Action Alternative

If the No-Action Alternative were selected, conditions would remain as described in Section 3.13. Since current conditions are considered adverse with regard to safety, implementation of the No-Action Alternative would result in adverse impacts.

5.0. CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental impacts of the proposed action that, when combined with other past, present and reasonably foreseeable future projects in an affected area may collectively cause more substantial adverse impacts. Cumulative impacts can result from minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state or local) or persons. In accordance with NEPA, a discussion of cumulative impacts resulting from projects proposed, under construction, recently completed, or anticipated to be implemented in the near future is required.

A number of projects are currently underway or pending at Fort MacArthur including: 1) renovation of housing areas, 2) demolition of Building 78, 3) construction of a new gym, town hall, and youth center, and 4) installation of a new ATFP-compliant front fence. However, since installation of the PV perimeter lighting system would occur at discrete locations away from these projects, implementation of these projects would not affect, nor would they be affected by, implementation of the proposed action. Construction and demolition projects which may be implemented simultaneously with the proposed action may cumulatively increase air quality impacts (specifically dust emissions) and noise during construction; however, impacts would be short-term and not significant since installation of PV panels and LED fixtures would occur over a period of days and involve minimal trenching and heavy equipment. Further, cumulative impacts of installation of a new front fence and the proposed action would be beneficial with regard to safety and land use.

In addition, the California Department of Transportation (CalTRANS) has several roadway projects funded for the next few years in the vicinity of the three housing areas. The main goals of these projects are to improve roadway conditions and repair areas damaged by heavy rains and other environmental conditions. The projects include repairing Western Avenue south of Westmont Avenue in the Rancho Palos Verdes area, road improvements from Vermont Avenue to Downey Avenue, and constructing a new interchange at the Ocean Boulevard overpass in the City of Long Beach, and rehabilitating pavement from the Orange County line to the 110 freeway. Negligible impacts associated with the delivery of supplies from the

south and west may occur as a result of work in these areas; however, with advance planning, excessive delays should not occur. In addition, primary access to the housing areas is from Interstate 405 and Pacific Avenue. Therefore, implementation of these projects would not have a significant cumulative impact on the proposed action.

Though highly unlikely, all of these projects being implemented simultaneously could cumulatively impact air quality and noise; however, through the use of best-management practices by all parties, construction-related dust and noise could be kept at a minimum. Therefore, the air quality and noise impacts would be negligible (i.e., not significant). No other cumulative impacts are expected to occur.

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